DOCUMENT RESUME

ED 035 887	48	AL 002 296

AUTHOR	LAZEWNIK, GRAINOM
TITLE	CONSTRUCTION OF AN ALGORITHM FOR STEM RECOGNITION IN THE HEBREW LANGUAGE. APPLICATION OF HEBREW MORPHOLOGY TO COMPUTER TECHNIQUES FOR INVESTIGATION OF WORD ROOTS. FINAL REPORT, PART 2.
INSTITUTION	NEW YORK UNIV., N.Y.
SPONS AGENCY	OFFICE OF EDUCATION (DHEW), WASHINGTON, D.C. INST. OF INTERNATIONAL STUDIES.
BUREAU NO	BR-8-0677
PUB DATE	JUN 69
CONTRACT	OEC-0-8-000134-3547-014
NOTE	181P.
EDRS PRICE	EDRS PRICE MF-$0.75 HC-$9.15
DESCRIPTORS	*ALGORITHMS, CATALOGING, *COMPUTATIONAL LINGUISTICS, COMPUTER PROGRAMS, *HEBREW, INDEXES (LOCATERS), INDEXING, *MORPHOLOGY (LANGUAGES), NOMINALS, VERBS

ABSTRACT

THIS DOCUMENT DESCRIBES DEVELOPMENTS IN THE PROJECT SINCE THE FIRST PART OF THE FINAL REPORT (ED 019 668) WAS PUBLISHED. A NOUN REFERENCE DICTIONARY WAS COMPILED IN TWO SECTIONS: VERBAL DERIVATIVES (AL 002 269 AND 270) AND NON-VERBAL DERIVATIVES (AL 002 267 AND 268). THERE ARE A TOTAL OF SOME 18,000 ENTRIES. ALL PARTS OF SPEECH EXCEPT VERBS WERE INCLUDED. THE PROGRAM FOR ANALYSIS OF DATA-INPUT WAS PERFECTED, AND THE EMPIRICAL RULES PREVIOUSLY FORMULATED WERE INCORPORATED INTO THE PROGRAM AND TESTED. THE VERB LISTING AND CLASSIFICATION, WHICH IS PART OF THIS REPORT, WAS COMPILED. THIS ENTAILED CONSIDERABLE REORGANIZATION AND MODIFICATION IN ORDER TO MEET THE SPECIAL NEEDS OF THE PROJECT. EMPIRICAL RULES WERE FORMULATED FOR THE PURPOSE OF FURTHER ENABLING COMPUTER ELIMINATION OF NON-RELEVANT ELEMENTS OF THE RESIDUE OF STEM AND AFFIX OUTPUT. RESULTS OF COMPUTER OPERATION ON INPUT OF DATA DRAWN FROM THIS LISTING IS INCLUDED IN THIS REPORT. (AUTHOR/DO)

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PA-48
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Project Nos. 6-1263 and 8-0352
Contract No. OEC-0-8-000134-3547 (014)

FINAL REPORT

CONSTRUCTION OF AN ALGORITHM FOR STEM RECOGNITION IN THE HEBREW LANGUAGE
Part 2

Application of Herbrew Morphology to Computer Techniques for Investigation of Word Roots

June, 1969

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FINAL REPORT

Rabbi Grainom Lazewnik

June, 1969

The research reported herein was performed pursuant to a contract with the Office of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

New York University

New York, N. Y.

Philip H. Smith, Jr.
Project Director

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* The series of these programs, from the initial fractionation to the grammatical analysis, are in the process of being documented and will follow this report as soon as completed.

Note: A REFERENCE DICTIONARY of some 18,000 entries is presented along with this report.

Acknowledgment:

It is certainly not repetitious on my part once more to acknowledge the valuable assistance rendered in the preparation of this project by those persons mentioned in the Final Report, February, 1968.

In addition, I hereby also express my sincere thanks to Mr. Neil Gorchow, Vice-President of Systems Programming of UNIVAC Data Processing Division of Sperry Rand Corporation, This is indeed a demonstration of true professional courtesy and appreciation of the value of the project. My deep thanks as well to Mr. Zbigniew L. Pankowicz of Information Transfer Sciences Section, Department of the Air Force, Griffiss Air Force Base, New York, for his kind assistance in supplying us with three volumes of the Final Report of RADC-TR-63-100.

I also wish to thank Dr. Philip Smith, Jr. for assuming the directorship of the project for the past year, and to Mrs. Gloria Horowitz for the kind cooperation of the Office of the Institute for Computer Research in the Humanities of New York University.

Introduction:

The continuing phase of our research covering the second year of study, though in essence a continuation of the first year's work, nevertheless was distinguished by necessity to cope with two problems of a relatively more novel nature. First there was the problem of compiling a relevant reference dictionary. The second problem arose from the realization that a program of a more particular nature was indicated.

Since the research is essentially a unit, it is quite obvious that background limitations and significance of this continuing study should remain the same.

The objective of the continuing phase of this study will have been reached when the program basic to the entire project shall have been completed.

CHAPTER VII[1]

VERB MODELS & CORRESPONDING MODELS OF BARKOLI'S (source) CLASSIFICATION

For the sake of greater clarity in the description of classes and in general, the verb list number one (L1) will now be given in inverted order so that for the sequential number of the project listed in uninterrupted order there will be noted the respective members of the corresponding Barkoli's classes.

A mere glance through Barkoli's listing will suffice to indicate that Dr. Barkoli's classification is based on distribution in inflection of vowl changes of semi-vowls, and the dages. This basis is entirely immaterial from point of view of the system employed for this project. Our system is completely organized about the morphologic consonental structure. Vowels, semi-vowls and the dages are therefore irrelevant.

Construction Alef (א) Pa'al

VERB MODEL
Project CM (class model) 1 SMR שמר

Source Numbers

1) 1
2)2
3) 3
4) 4
5) 6
6) 7
7) 8
8) 13
9) 15
10) 16
11) 17
12) 26
13) 27
14) 29

---

1. The enumeration of pages and chapters in this report is a direct continuation of the enumeration followed in the Final Report of February, 1968, with the exclusion of pages numbered 107-116 in the latter volume.

Verb Model			Source Numbers	
Project CM 2	BSL	בשל	1) 3 2) 10 3) 11	4) 14 5) 18 6) 28
Project CM 3	'MZ	אמץ	1) 9	
Project CM 4	'KL	אכל	1) 12	
Project CM 5	YSB	ישב	1) 19 2) 20	
Project CM 6	YZQ	יצק	1) 21	
Project CM 7	NPL	נפל	1) 22	
Project CM 8	NSQ	נשק	1) 23 2) 24	
Project CM 9	NPH	נפח	1) 25 2) 30 3) 60	

Verb Model			Source Numbers	
Project CM 10	QNH	קנה	1) 31	5) 35
			2) 32	6) 36
			3) 33	7) 62
			4) 34	8) 63
Project CM 11	NTH	נטה	1) 37	
Project CM 12	TMN	טמן	1) 38	3) 41
			2) 40	4) 42
Project CM 13	ZQN	זקן	1) 39	
			2) 57	
Project CM 14	KRT	כרת	1) 43	
			2) 44	
			3) 45	
Project CM 15	QWM	קום	1) 46	3) 64
			2) 47	4) 65
Project CM 16	LWN	לון	1) 48	

Verb Model			Source Numbers
Project CM 17	SYM	שים	1) 49 2) 50
Project CM 18	DYN	דין	1) 51
Project CM 19	HGG	חגג	1) 52 2) 53
Project CM 20	QBB	קבב	1) 54 2) 55 3) 56
Project CM 21	NTN	נתן	1) 61
Project CM 22	MWT	מות	1) 66
Project CM 23	YGR	יגר	1) 58
Project CM 24	YKL	יכל	1) 59

L1 Construction Bet(ב) Nif'al

Verb Model			Source Numbers
Project CM 1	SMR	שמר	1) 1 2) 2 3) 3 4) 4 5) 5 6) 6 7) 7 8) 8 9) 9 10) 10 11) 11 12) 17 13) 18
Project CM 2	YSD	יסד	1) 12 2) 13 3) 14
Project CM 3	NGF	נגף	1) 15 2) 16 3) 19
Project CM 4	GLH	גלה	1) 20 2) 21 3) 22 4) 23 5) 24
Project CM 5	NTH	נטה	1) 25
Project CM 6	TMN	טמן	1) 26 2) 27

Verb Model			Source Numbers
Project CM 7	KRT	כרת	1) 28 2) 29
Project CM 8	SWG	סוג	1) 30
Project CM 9	BYN	בין	1) 31
Project CM 10	ZWD	צוד	1) 32 2) 33
Project CM 11	SBB	סבב	1) 34 2) 35
Project CM 12	BZZ	בזז	1) 36
Project CM 13	HLL	הלל	1) 37

L1 Construction Gimel (ג) Pi'al

Project CM 1	DBR	דבר	1) 1	7) 7
			2) 2	8) 8
			3) 3	9) 9
			4) 4	10) 10
			5) 5	11) 11
			6) 6	12) 12

Verb Model			Source Numbers
Project CM 2	ZWH	צוה	1) 13
			2) 14
Project CM 3	SKN	סכן	1) 15
			2) 16
			3) 22
Project CM 4	'MT	אמת	1) 17
			2) 18
Project CM 5	QWM	קום	1) 19
	QWMM	קומם	2) 20
Project CM 6	QYM	קים	1) 21
Project CM 7	SBB	סבב	1) 23
Project CM 8	PRNS	פרנס	1) 25
			2) 26
			3) 27
Project CM 9	!NYN	ענין	1) 28

L1 Construction Dalet (ד) Pu'al

Verb Model			Source Numbers	
Project CM 1	KBD	קבה	1) 1	9) 9
			2) 2	10) 10
			3) 3	11) 11
			4) 4	12) 12
			5) 5	13) 13
			6) 6	14) 14
			7) 7	15) 15
			8) 8	16) 26
Project CM 2	ZWH	צוה	1) 16	
			2) 17	
Project CM 3	SKN	סכן	1) 18	
			2) 19	
			3) 23	
Project CM 4	ZMT	צות	1) 20	
			2) 21	
Project CM 5	QWM (QWMM)	שפחת	1) 22	

Verb Model			Source Numbers	
Project CM 6	QWM*	קום	1) 24	
	(QYM)	קים		
Project CM 7	!L!L	עלעל	1) 25	
Project CM 8	GLGL	בלבל	1) 27	
			2) 28	
			3) 29	
Project CM 9	!NYN	ענין	1) 30	

L1 Construction He (ה) Hitpa'el

Project CM 1	QSR	קשר	1) 1	7) 7
			2) 2	8) 8
			3) 3	9) 10
			4) 4	10) 22
			5) 5	11) 23
			6) 6	12) 33
Project CM 2	YKH	יכח	1) 9	
Project CM 3	ZQF	זקף	1) 11	
			2) 12	
			3) 29	

Verb Model			Source Numbers	
Project CM 4	Z̲DQ̇	צדק	1) 13 2) 14	
Project CM 5	SDR	סדר	1) 15 2) 16 3) 17	4) 18 5) 19
Project CM 6	DBQ		1) 20 2) 21	
Project CM 7	GLH	גלה	1) 24 2) 25	
Project CM 8	'MN	אמן	1) 26 2) 31	
Project CM 9	'MT	אמת	1) 27	
Project CM 10	QWM (QWMM)	קום קומם	1) 28	
Project CM 11	BYN	בין	1) 29	

Verb Model			Source Numbers
Project CM 12	QWM (QYM)	קום קים	1) 30
Project CM 13	GLL	גלל	1) 32
Project CM 14	PRNS	פרנס	1) 35 2) 41 3) 42
Project CM 15	ZLZL	זלזל	1) 36
Project CM 16	ZMZM	צמצם	1) 37
Project CM 17	SLSL	סלסל	1) 38 2) 39
Project CM 18	DLDL	דלדל	1) 40
Project CM 19	!NYN	עניין	1) 43

L1 Construction Waw (ו) Hif'il

Verb Model			Source Numbers	
Project CM 1	QZ̲R	קצר	1) 1	8) 8
			2) 2	9) 11
			3) 3	10) 15
			4) 4	11) 16
			5) 5	12) 17
			6) 6	13) 40
			7) 7	
Project CM 2	YRD	ירד	1) 9	
			2) 10	
Project CM 3	YZ̲B	יצב	1) 12	
Project CM 4	NPL	נפל	1) 13	
			2) 14	
Project CM 5	QNH	קנה	1) 18	
			2) 19	
			3) 20	
Project CM 6	YRH	ירה	1) 21	

Verb Model			Source Numbers	
Project CM 7	NKH	נכה	1) 22	
Project CM 8	ZQN	זקן	1) 23	
			2) 24	
Project CM 9	SHT	שחת	1) 25	
Project CM 10	QWM	קום	1) 27	
			2) 29	
Project CM 11	PWR	פור	1) 28	3) 31
			2) 30	4) 34
Project CM 12	BYN	בין	1) 32	
Project CM 13	MWT	מות	1) 33	
Project CM 14	SBB	סבב	1) 35	3) 38
			2) 36	4) 39
Project CM 15	TLL	תלל	1) 37	

L1 Construction Zayin (ז) Hof'al

Verb Model			Source Numbers	
Project CM 1	QZR	קצר	1) 1	7) 7
			2) 2	8) 8
			3) 3	9) 13
			4) 4	10) 14
			5) 5	11) 15
			6) 6	12) 28
Project CM 2	YRD	ירד	1) 8	2) 9
Project CM 3	YZB	יצב	1) 10	
Project CM 4	NGS	נגש	1) 11	2) 12
Project CM 5	GLH	גלה	1) 16	2) 17
Project CM 6	NKH	נכה	1) 18	
Project CM 7	ZMN	זמן	1) 19	
Project CM 8	SHT	שחת	1) 20	
Project CM 9	QWM	קום	1) 21	2) 23
Project CM 10	BYN	בין	1) 22	2) 24
Project CM 11	MWT	מות	1) 25	
Project CM 12	HLL	חלל	1) 26	2) 27

Detailed Description of Verb Models

The three verb lists given above are adequate for the purpose of supplying the computer with the necessary detailed information. A discussion with respect to this for each class follows below.

However, before drawing up the list, certain preparatory steps were taken. Barkoli's listings were edited for typograhical errors, for omissions and for corrections. For example, the Hitpa'el of the radical LQḤ (לקח) was omitted by Barkoli, though it is a known Biblical form.[1] Similarly the full Hitpa'el form of the verb NS'--HITNASE (התנשא), was omitted.[2]

The classification for this project disregarded the *mater lactioni*[3] in the participle forms. Thus, CM1 includes both plena and defectiva orthography. This special modification in the plan of classification is both a further illustration of the gap which so often abtains between theory and concrete application.

Each radical was further indexed by means of a symbol indicating whether it was transitive, intransitive or both:

I = YoZe -- Transitive
R = !oMeD - Intransitive
IR = YoZe and !oMeD

Project verb models were then ordered to correspond with Dr. Barkoli's listing, as given above and then punched on IBM cards.

---

[1] Exodus IX, 24; Ezekiel I, 4.

[2] Other omissions are indicated throughout the verb discussion each in its place.

[3] אמות הקריאה

Before the different models were rigidly analyzed, an overall structure adopted for programming had to be introduced. This structure embraced as a basis a correlative ordering of the various affixes characteristic of tense, person, number and gender.

CM 1-3

Three types of participles are included. CM1 are participles which occur with plena and defectiva spelling, e.g., SMR (שמר). CM-2 are participles which occur with defectiva spelling only, e.g., BSL (בשל). CM-3 are participles which occur in Pa'il form, e.g., 'MZ, Amiz (אמיץ).

It was necessary to list an additional negative model CM2, in order to differentiate concrete forms having a Waw (ו) after the first radical from the verb under discussion. This model (CM2) includes verbs of the Pa'el (BSL בשל), Pa'al (HKM חכם) forms of šlemim and the Pa'ĕl of other families, such as ZM' (צמא). HZQ (חזק) (Hazaq=to be strong, verb) may be distinguished now from HWZQ (חוזק) (Hozeq=strength, noun).

We also included in CM1 the Mišnaic Hebrew participial form evolved from the earlier Biblical Lamed-Alef (לא) in which the Alef may be dropped and the final Mem of the plural changed to a Nun, e.g., QWRYN (Korin קורין).

CM 4

CM 4 was noted both for its characteristic of dropping the

Alef ( ) in the imperfect, first person, as well as its unique form of the infinitive of LWMR (Lomar לומר).

CM 6

Among the Hasre Pe Yud, it was necessary to differentiate between those which drop the yud in the imperative as well as in the infinitive (CM 5) YSB (ישב), and those which may not drop it in the imperative (CM 6) YZQ (יצק).

CM 7-8

In the case of Pe Nun, in addition to the general characteristic of the coalescence of the Nun in the imperfect, it seemed necessary to differentiate between those which may drop the Nun also in the infinitive and/or the imperative, and those which usually do not. After reflective review however, I decided that because of a large variety of inflective changes; namely, since it is optional either to retain or drop the first radical nun, if one takes into account the peculiarity of the Misnaic grammatical forms, it would be advisable to classify all Pe Nun verbs indiscriminately as belonging to a single class, (CM 7). The sole exception exists in case of such verbs as NFH (נפח) which have been naturalized into the class which includes the verb LQH (לקח), (CM 9).

CM 9

CM 9 represents those verbs which may also adopt the !LT (עלת) form in addition to !L (על), e.g. NPH (נפח), Lipah (ליפח) and Lapahat (לפחת); LQH (לקח), Liqah (ליקח) and Laqahat (לקחת).

CM 10-11

The characteristics of the Lamed He form of inflection were coded in detail in CM 10. Its dropping the he, the adaption of the taw and yud, and its distinctive infinitive form of wt (ot ות). The next class model represents Pe Nun Lamed He, which has the combined characteristics of the lamed he and the pe nun, e.g. NTH (נטה).

CM 12-13

These two models represent the coalescence of the nun with the suffixal nun, e.g. TMN (טמן) Titmona, TTMNH (תטמנה). CM12 represents the general participle, e.g. TWMN (טומן) or TMN (טמן); CM13 represents the Po'ĕl participle, e.g. Zaken (זקן), Samĕn (שמן).

CM 14

The Lamed Taw (KRT כרת) had required a class for itself because of the coalescence of the taw with the suffixal taw of the perfect, e.g. KRTY=KRTTY (Karati=Karatti) (כרתי=כרתתי).

CM 15-18

!ayin Waw and !ayin Yud verbs whose characteristic inflections are well described in grammars were coded under CM 15 (ע"ו) and CM 17 (ע"י). The !ayin-Waw Lamed Nun and !ayin-Yud Lamed-Nun combine the characteristics of !ayin Waw and !ayin Yud families with the coalescence of the Nun: CM 16 LWN (לון) and CM 18 DYN (דין).

Though the roots of the !ayin Waw CM 15 and !ayin Yud verbs CM 17 must be distinguished and have therefore been divided into two groups, the data coded in the program were not duplicated since the material properties of course are the same. A mere indication of comparison was sufficent.

CM 19-20

The !ayin !ayin verbs required two distinct classes. CM 19 represents those which drop one of the !ayin radicals in the perfect except for third person; HGG (חגג) HGWTI or HGTI (Hagoti Hagti חגותי, חגתי) HGG (חגג) HGGW (חגגו) and the participle retain both !ayins (Hogeg) HWGG (חוגג). The other, CM 20, QBB (קבב) drops an !ayin in the participle and third person perfect, QB, QBH, etc.; QBW (Qav, Qaba, Qabu קב, קבה, קבו). The former is also distinguished by adopting an additional form (an extra yud) in third person, feminine plural, e.g. THGYNH (תחגינה) in addition to THGNH (Tahggna תחגנה).

CM 21

NTN (נתן) is the only radical with a nun in the initial and final place. They affect the inflection in the following manner. The final nun is dropped in the perfect in all but third person. In the imperfect the primae nun is dropped while the final nun remains but in coalesced form with a suffixial nun. The imperative corresponds to the imperfect as usual. The infinitive is unique TT (תת).

CM 22

!ayin Waw Lamed Taw MWT (מות) combine in the perfect the !ayin Waw characteristics with the coalescence of the radical Taw with the suffixial taw.

CM 23-24

Two anomalous Pe Yud that have no equivalents in the entire verb system in Hebrew nor are they similar the one with the other: YGR CM23 (יגר) is a radical which occurs only in the perfect and in the participle. In the perfect its form of inflection is regular, like CM 1. In the participle it bears the passive participle form YGWR (Yogor יגור). The imperfect, imperative and infinitive forms are lacking in this radical. The forms YGWR (Yogur יגור) GWR (Gur גור), LGWR (Lagur לגור) are logically considered as derived from the radical GWR (Gur גור) since these are the regular ayin WAW forms of inflection. It would be irrelevant to consider them as irregulars of YGR.

CM 24

In the perfect YKL (יכל) was considered as regular slemim, since vowl differences are not encountered. Because of the participle, it was entered as CM 2 since now Waw may occur after the first radical. The peculiarity of a Holam (חולם) with Waw after the second radical was taken into account, and thus YKL presents an unclassified model.

Pa!al--Special Classes and Unclassified (L 3)

The diversity of combinations permitted by those verbs the radicals of which include weak characters and the many exceptional forms anomalously assumed by individual verbs of a given family compelled further distribution into new classifications or unclassified groups.

The twenty-four corresponding classes of construction Alef (Pa!al) have thus been extended. The added groups have been assigned consecutive numbers from 25-43.

CM 25

The radical Y'H (יאה) retains the Yud in the imperfect. Thus it falls into the same class with regular lamed-he, in spite of its combining features of lamed-he and pe-yud. The participle characterized by an adjectival form had to be distinguished however, and was listed therefore as CM 25.

CM 26

The radical YLK (ילך) was entered for the imperfect, imperative, and infinitive, as the pe-yud of the same form (i.e. dropping the yud). The radical HLK (הלך) which is used usually in the perfect and participle only, was entered as CM 1.[1] Though not all tenses and moods of HLK are in common usage, they are correct and are found in the literature. The infinitive LHLK (להלך , Ləhăloḵ) is not mentioned in Barkoli's Luah and not in Even Sosan's

---

[1] Above, p. 96.

Milon Hadas, but it is found four times in the Bible.[2] Obviously its occurrence is legitimate. There was no reason therefore to list HLK as an exceptional, unclassified radical. The fact that it is archaic and not in use does not thereby constitute a problem for the computer. HLḴ was therefore placed in CM 1 as a regular Slemim verb. CM 32 (page 97) was therefore withdrawn as a special class.

CM 27-40 may be readily understood from the comments on page 97. CM 41 and 42 belong to L2. Thus, there are no conjugation models corresponding to these numbers.

Pa!al--Reclassification (L2)[3]

In the actual grouping of the various verbs it was found that not always did a one-to-one correspondence hold between Barkoli's listing and L1. A new listing (L2) was therefore drawn up for the exceptions. The numbers of L2 were included therein each for a special reason specifically noted below.

DBQ -דבק

The participle of DBQ (דבק) is both DBQ (דבק) and DWBQ (דובק). It should be classified therefore as CM 1 where the plena and defective types of spelling are allowed. Dr. Barkoli is not consistent in this case. In reference to his model #5 he makes a note that the participle form is only DBQ and not DWBQ. In the listing (page 61) he comments, "also DWBQ." The fact, however, is that both forms are considered legitimate and accepted by Milon

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[2] Exodus III, 19; Numbers XXII, 13; Job XXXIV, 23; Ecclesiastes VI, 8. Also MHLḴ (מהלך) is found once, Numbers XXII, 16.

[3] Above, p. 89.

Hadaš and other dictionaries.

ḤBR - חבר

HBR has the characteristics of Barkoli's model #8 (!VD עבד) and of model #11 (HKM חכם). The basis for Barkoli's classification are the vowel differences. The former is pronounced with a compound šewa (hataf or correptum). The latter is with a šewa quioscents. These two classes represent respectively our L1-1 corresponding to Barkoli's #8 and our L1-2 corresponding to Barkoli's #11. HBR however, differs from HKM (חכם) in the participle where it may gain also a waw--ḤWBR (חובר). It should therefore belong to our CM 1 only, and was therefore withdrawn from 2. The same is true for HNB (חנב) and HRZ (חרץ).

It may seem that the effort of reclassification in this case is superfluous. Since CM 1 was also assigned to these verbs there is nothing lost in listing them in CM 2 as well. Since grammatically no waw is possible in the participle form of this class, no problem will herein arise to confuse the computer. Nevertheless the knowledge of the negative is also important and should be utilized by the computer. A radical which does not take a waw in the participle must be indicated so that homographs whose origin is another radical can be identified.[4]

HNF - חנף

HNF was classified as CM 1 HWNF (חנף) and HNF (חנף),

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[4] See discussion on CM 1-3 (L1) above, p. 122.

and CM 3 HNYF(חניף) and withdrawn from #2 (because waw is allowed in the participle).

Y'B- יאב

Y'B does not take a waw in the participle. It was therefore changed from CM 1 in which it would normally belong as corresponding to Barkoli's #17 (YSD יסד), which retains the yud in the imperfect and assigned to CM 2.

YHR- יהר

The participle of YHR is YHYR (Yahir יהיר). It was therefore reclassified to CM 3 from Barkoli's #17 which corresponds to project #1.

YZ'- יצא

The dropping of the yud and the distinctive infinitive form Z'T (צאת) led to its inclusion within the class YD! (ידע), YS (ישב) and not the class of QR' (קרא) as per Barkoli's listing.

YZQ- יצק

The imperative of this verb occurs not only as regularly in accordance with the form of the imperfect but also without the yud: ZQ (Zaq צק) as in CM 5.

YZR- יצר

YZR appears in both forms of the imperfect, retaining the yud as in the case of a regular slemim verb, and dropping it as in pe-yud, (Zar=Sev צר = שב)CM5.

YSN- ישן

The pe-yud lamed-nun, Barkoli discusses the specific coalescence of the nun of these verbs in notes. In order to draw attention to the characteristic as well as the adjectival form of the participle, a special class has been assigned for them.

NDḤ- נדח

While Barkoli was concerned with the lamed-het characteristic of NDH (נדח) and with vocalization of the perfect and participle which coincides with the Nif'al construction, it belongs according to our method of classification, to the pe-nun class, CM 7. Its infinitive and imperative retain the nun.

NT!- נטע

The infinitive of NT! appears in both formsLNT! or LYNT! (לנטע or ליינטע) as in slemim and LoTa!aT as in CM 9. The imperative again has two forms, retaining the nun as in CM 7 and dropping it as in CM 9.

'LZ- עלז

The participle of 'ALZ belongs to our CM 2 BSL (בשל) = 'ALÉZ (עלז) and to CM 3 'ALIZ (עליז).

'RB-ערב

The gutteral pé in 'RB assigns it to the same class as 'MZ (אמץ) according to Barkoli's classification. Since this project discounts vowel changes, it belongs to CM 1. Its participle may or may not take a waw: !AREV and !WREV (ערב , עורב).

SDD שדד

The participle of Sdd appears in two forms, SWDD (שודד) (CM 19 HWGG- חוגג), which is the slemim form, and as SD (שד) (CM 20 QBB, QB- קבב , קב). In addition it appears also in the slemim form in all tenses and moods. It was therefore withdrawn from Barkoli's #52 which corresponds to our #19, and was given only as our CM 20 in addition to slemim (CM 1)[5].

Nif!al-L1[6]

CM 1

The special features of Nif!al are:

The additional nun in the perfect and participle, and the he in the imperative and infinitive. Thus CM 1 of Nif!al represents the possibilities of a radical appearing in a fractionation which combines a Nif!al affix in addition to the regular affixes of tense, gender and number.

CM 2

CM 2 represents the assimilation of the pe-yud into pe-waw. This occurence is indicated as possible in all tenses and moods.

CM 3

CM 3 refers to Pe-nun radicals only. Its occurence in

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[5] On p. 89 it should read "reclassified to conjugation #1 and #20" instead of "#19."

[6] See above, p. 83.

Nif!al would be same as slemim of Pa!al except for the imperative and infinitive, which are prefixed by a he.

CM 4-7

The lamed-he pe-nun, lamed-he lamed-nun, and lamed-taw in Nif!al have the same characteristics as their cognates in Pa!al, plus the peculiarities of the Nif!al affixes.

CM 11-12

Our method necessitated differentiation among the Kfulim: those whose vowels in the imperfect do not permit a waw, CM 11 (SVV-YSV, Yisav יסב); those whose holam may permit a waw, such as CM 12 (BZZ-YBWZ, Yiboz יבוז); and those whose vowels wbuld not allow a waw in any tense or mood, such as CM 13 (ḤLL-NiḤal, YéḤal, HéḤal, HéḤél-- חלל , נחל , יחל , החל , החל ,).

Nif!al-L3[7]

The additional classes of exceptional verbs in Nif!al 14-20, are readily understood from the description on page 98, except for CM 16, YRH ירה . This pe-yud lamed-he radical is inflected only in part as the pe-yud. In the perfect and the participle it is conjugated exactly as the pe-yud YSD (יסד) of CM 2.[7a] In the imperfect, the imperative and the infinitive, the yud is not assimilated into waw as in the case of CM 2. It follows instead the lamed-he pattern of CM 4 GLH (גלה), Yigale (יגלה) = Yiyare (יירה), Hiyare (הירה), Hiyarot (הירות).

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[7] See above, p. 98.

[7a] With the transmutation of the he as in the regular lamed-he

Pi!el L1

Slemim in Pi!el utilizes the same data as in slemim of Pa!al and in equal manner, with the exception of the participle where a mem is prefixed and no waw is involved.

CM 2

Lamed he verbs also follow the pattern of lamed-he Pa!al, with the exception that the participle is concerned with the mem instead of the waw.

CM 3

Lamed-nun follows the pattern of slemim except for the coalescence of the nun with the suffixal nun.

CM 4

Lamed-taw have the same pattern as the lamed-nun but the coalescence of the taw is with the suffixical taw.

CM 5

The detailed information for the ayin-waw and ayin yud of the Polel form, e.g. QWM, Qomem (קום, קומם) SYR, Sorer (סור, סורר) has been introduced under this number; namely, the adoption of a holam (waw) and the doubling of the final radical.

CM 6

CM 6 was reserved for the ayin-waw whose waw is mutated to a yud, e.g. QWM≛QYM (Kayem- קים). However, realizing that our purpose is best served by considering them as independent radicals, the entire CM 6, then falls in line with CM 1. There is no distinction in their inflection patterns from that of slemim. For example, QYM, GYR, HYV,SYR etc. (קים, גיר, חיב, סיר) are to be considered as independent radicals and not derivations of QWM, GWR, HWV, SWR (קום, גור, חוב, סור) since the yud is functioning as a consonant, it follows the pattern of the slemim as mentioned before in the case of ayin-waw, the type of ZWG, ZaWeg (זוג).

It is true that the philological status of these verbs has anciently been and continues to be a matter of debate. Some scholars[8] hold that the yud of QYM (קים) is derived from the waw of QWM (קום)[9], which waw, in their view, was originally consonantal. The other view, namely that the waw was always vocal, was championed by many other authorities.[10] These distinguish true consonantal ayin-waw, e.g. ZWG (זוג) from middle vowel radicals, e.g. QWM (קום)[11]. The consonantal ayin waw radicals retain the consonantal characters of the waw throughout the various inflections. The middle vowel radicals on the other hand, follow invariably the regular inflections of such vowels. On this basis, the yud of QYM (קים) would belong to an independent radical. Therefore, no error was introduced in the computer functioning, by basing ourselves on the greater convenience of dealing with one class less necessitated by the first point of view, namely, in which a waw is mutated to yud.

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[8] See Zvi Har-Zahav, Diqduq Hallason Halivrit (Tel-Aviv: 1956) Volume III, p. 609.

[9] So treats QWM --Even Sosan. See entry.

[10] This is the opinion of the Magid (Rav Smuel, 11th century) and recently Bottcher, Muller, Stade and Wellhausen; see Gesenius' Hebrew Grammar, edited by E. Kautzsch, second English edition, by A. E. Cowley (London, 1963) p. 194, note 1.

[11] See also the opinion of Brockelman & Grundriss in Gesenius, op. cit.

CM 7

The ayin-ayin are distinguished by adopting an additional waw to indicate a holam, e.g. SVV-SWVV (Sovev-סובב , סבב). This in fact is characteristic of the ayin-waw radical of the "middle vowel" type such as QWM (קום) of CM 5. On the other hand, the ayin-ayin do not double any radical while the ayin-waw do. As a result these two types of verbs become identical, in all forms of inflection in Pi!el. The ayin-ayin adopted the waw while the ayin-waw doubled the final radical. In the perfect, for example, QWM (קום) becomes QWMM (Qomem- קומם) and SVV (סבב) becomes SWVV (Sovev- סובב). The same occurs in all tenses. The computer must know how to separate the stem of fractionated verbs from any added element in order to arrive at the three original radicals.

Hence, a special group had to be set up for the ayin-ayin. The information now adequately ordered could then be fed to the computer and the possibility of confusing the ayin-waw and the ayin-ayin was thus avoided. The grammatical data for the latter reads, "a waw may be adopted after the first radical." The former's grammar reads, " a waw may be dropped and the final radical doubled." The "may" indicates the consideration of the defectiva form of spelling.

It seems in retrospect however, that these two classes might have been included in one. An analysis of all radicals of the ayin-waw and ayin-ayin families would most likely show that there are no duplications, i.e., that the radicals of one family will be absent from the other. The two families might therefore have been combined into one.

CM 8, 9 [12] and CM 10, 11 of L3[13] are self-explanatory.

Pi!el Reclassification (L2)

GNN (גנן)

Though GNN is an ayin-ayin verb by virtue of its consonants, it was reclassified on basis of its final weak radical (nun) which coalesces with the suffixial nun. Thus GNN was placed with ayin-waw lamed-nun !WN (עון), LWN (לון) which constitutes a class for itself CM 10.

KWN (כון)[14]

Dr. Barkoli apparently has overlooked the fact that KWN appears also in the Polel form KWNEN (כונן) in addition to Pi!el (Kiwan- כון). Neither does Dr. Barkoli relate the KWNN form to the radical KNN (כנן) which he assigns to model #15 SKN (סכן). Thus is conjugated as Saken (סכן) and KWNN (כונן) is missing entirely. KWN was therefore also placed in CM 10 (LWN) in addition to CM 3, SKN (לון סכן)

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[12] See above, p. 84.

[13] See above, p. 99.

[14] This radical is missing from L2 on p. 90.

Hif!il

The forty models Dr. Barkoli set for binyan Hif!il fell , according to our system of classification, into fifteen model classes. They were given on page 87. The reason for omitting the remaining 35 models is obvious and may be readily understood by glancing at the models in the Luah. These deal with differences of vocalization only. On the other hand, as in the other constructions, so in Hif!il, there were verbs that required additional models. The morphological forms of these verbs combine some features of Barkoli's models with certain specific characteristics of their own. (Dr. Barkoli attends to most cases of such occurences by sidcussing them in his notes, as mentioned above in reference to other constructions). Others were reassigned to already established model verbs better suited to them on the basis of their morphology. Those are given in L2.

Most of the fifteen models of L1 have already been described above. I shall here limit the discussion to some additional clarification. Among the pe-yud it was necessary to differentiate between those whose yud is assimilated to a waw CM 2 (Horid-הוריד) and those which just drop the yud CM 3 (יצב).

Similarily for the ayin-waw and ayin-yud radicals. CM 10 represents those radicals whose perfect may assume the Haf!iloti

(= הפעִילות) in addition to the regular Hé'falti (= הפעלתי) form. CM 11 represents those which appear in the Hefalti form only.

Pu!al, Hof!al & Hitpa!el

While Pu!al and Hof!al have relatively few changes, Hitpa!el underwent a major classification. In addition to the factors bringing about the changes of classes in the other binyanim, Hitpa!el required much reclassification caused by the sibilants Z, S, Š R, Z̲ (ז,ס,ש, ר, ץ) and the linguals D, T (ד , ת). Both cause and changes will become apparent by scrutinizing the three lists given above.

CHAPTER VIII

COMPUTERIZATION OF THE REFERENCE DICTIONARY

VERBS

For the purpose of computer manipulation a suitable annotation system was devised. This system in principle is based on arbitrary numerical correspondences which identify the construction and possible class models of the verb under discussion.

Annotation System

70	BEGINNING OF A NEW LIST OF INFORMATION	
****	END OF ALL INFORMATION FOR ONE UNIT SET	
71	ENTRY	
72	CONSTRUCTION # ⊕	א
73	CONSTRUCTION # A	ב
74	CONSTRUCTION # B	ג
75	CONSTRUCTION # C	ד
76	CONSTRUCTION # D	ה
77	CONSTRUCTION # E	ו
78	CONSTRUCTION # F	ז

If a construction has more than one Class Model, a comma follows the letter, which is then followed by the next sub-group.

As verb data were fed into the computer, the computer defined each such verb by the corresponding consecutive number. This list of consecutive numbers starts immediately. after *70*.

COMPUTERIZED VERB LIST

Note: The very first card of this list referring to the verb AA+ (   ) has been printed last.

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*70* 2*71*CA+*72*4R*73*1R*74*1I*75*1R*76*1R*77*1I****
*70*3*71*DA+*72*30 I*76*7 R****
*70*4*71*GA+*74*1 I*75*1 R****
*70*5*71*CGA+*74*3I*75*3R****
*70*6*71*JA+*72*1 R*74*1 I*75*1 R*76*1 R*77*1 I****
*70*7*71*LA+*72*2 R*73*1 R*76*1 R*77*1 I****
*70*8*71*OA+*74*3 I*75*3 R*76*8 R****
*70*9*71*QA+*72*1 I*77*1 I****
*70*10*71*RA+*72*1 R****
*70*11*71*UA+*74*1 I*75*1 R****
*70*12*71*WA+*72*1 I*73*1 R*74*1 I*75*1 R*76*1 R****
*70*13*71*XA+*72*1 R*74*1 I*76*1 R*77*1 R****
*70*14*71*CB+*72*1 I*73*1 R*74*1 I*75*1 R*76*1 R****
*70*15*71*SB+*72*1 I*73*1 R*74*1 I*75*1 R****
*70*16*71*XB+*72*1 I*73*1 R*74*1 I*75*1 R****
*70*17*71*SXB+*74*1 I*75*1 R*76* 1 R****
*70*18*71*AC+*72*1 R*73*1 R*76*1 R*77*1 I****
*70*19*71*DC+*72*1 I*75*2 R*76*7 R*77*5 R****
*70*20*71*MC+*72*2 R*74*1 I R*75*1 R*76*1 R*77*1 I R****
*70*21*71*WC+*72*1 I*73*1 R*74*1 R*77*1 I R****
*70*22*71*XC+*73*1 R*74*1 I*75*1 R*76*1 R*77*1 I*78*1 R****
*70*23*71*AD+*72*1 I*73*1 R*74*1 I*75*1 R*76*1 R*77*1 I****
*70*24*71*ADAD+*74*1 R*75*1 R****
*70*25*71*CD+*72*1 I****
*70*26*71*DD+*72*1 R****
*70*27*71*LD+*72*1 I*73*1 R*74*1 I*75*1 R*76*1 R*77*1 I****
*70*28*71*MD+*72*1 R****
*70*29*71*DE+*74*2 I*75*2 R*76*7 R****
*70*30*71*HE+*77*10 R*78*9 R****
*70*31*71*UE+*72*15 R*77*10 I*78*9 R****
*70*32*71*XE+*72*15 R*73*10 R*77*10 I*78*9 R****
*70*33*71*YE+*74*1 I*75*1 R*76*1 R*77*1 R****
*70*34*71*XXE+*74*1 I*75*1 R*76*1 R****
*70*35*71*YE+*74*5 R*76*10 R****
*70*36*71*YE+*74*1 I****
*70*37*71*ZE+*73*10 R*74*12I****
*70*38*71*LF+*72*1 R*75*1 R*76*1 R****
*70*39*71*CF+*72*12 I*74*3 I*75*3 R*76*8 R*77*8 R*78*1 R, 7 R****
*70*40*71*XF+*72*1 I*73*1 R*74*1 I*75*1 R*76*1 R****
*70* 41 *71* GXF+ *74* 8I *75* 8R *76* 14R ****
*70*42 *71*CG+ *72*4R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*43 *71*DG+ *73*4R *74*2I *75*2R *76*7R ****
*70*44 *71*DEG+ *76*7R ****
*70*45 *71*FG+ *72*4I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*46 *71*LG+*74*1I *75*1R *76*1I ****
*70*47 *71*XG+ *72*1R, 4R *73*1R *74*1R *75*1R *76*1R *77*1I *78*1R ****
*70*48 *71*DH+ *74*2I ****
*70*49 *71*HH+ *77*14I *78*12 R ****
*70*50 *71*MH+ *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*51 *71*XH+ *72*1I *73*1R ****
*70*52 *71*AI+ *72*1I *73*1R *74*1R *75*1R ****
*70*53 *71*CI+ *72*17 R *74*6I *75*6R *76*1R ****
*70*54 *71*JI+ *74*6I *75*6R *76*1R ****
*70*55 *71*LI+ *72*1R *74*6R *75*6R ****
*70*56 *71*MI+ *74*6I *75*6R *76*1R ****
*70*57 *71*OI+ *74*3I *75*3R *76*8R ****
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*70*58 *71*ZI+ *74*4I *75*4R ****
*70*59 *71*APK+ *74*8I *75*8R *76*14 R ****
*70*60 *71*XPK+ *74*8R *76*14 R ****
*70*61 *71*LK+ *72*4I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*62 *71*CLK+ *74*8I *75*8R *76*14 R ****
*70*63 *71*OQK+ *74*9I *75*9R *76*19 R ****
*70*64 *71*MK+ *76*1 R ****
*70*65 *71*SK+ *72*4R, 1R *74*1I *75*1R *77*1R ****
*70*66 *71*XK+ *74*1I *75*1R *76*1R ****
*70*67 *71*DL+ *72*10 R *77*5I ****
*70*68 *71*DL+ *77*1I ****
*70*69 *71*GL+ *72*1I *73*1R *74*1I *76*1R *77*1R ****
*70*70 *71*HGL+ *74*8I *75*8R *76*14 R ****
*70*71 *71*LL+ *74*1I *75*1R *77*1R ****
*70*72 *71*ML+ *72*3R *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*73 *71*MNL+ *74*8R ****
*70*74 *71*ONL+ *74*9I *75*9R *76*19 R ****
*70*75 *71*SL+ *72*1 R*74*1I *75*1R *76*1R *77*1 IR ****
*70*76 *71*UL+ *73*1R *74*1I *75*1R *76*1R *77*1R ****
*70*77 *71*XZL+ *74*8I *75*8R *76*14 R ****
*70*78 *71*CN+ *72*1I *73*1R *74*1R *76*1R *77*1R ****
*70*79 *71*LN+ *72*2R *73*1R *74*1R *75*1R *77*1R *78*1R ****
*70*80 *71*LLN+ *74*8I *75*8R *76*14 R ****
*70*81 *71*ON+ *72*12 I *73*6R *74*3I *75*3R *76*8R *77*8R *78*7R ****
*70*82 *71*UN+ *72*3R *74*1R *75*1R *76*1R *77*1R ****
*70*83 *71*XN+ *72*4I *73*1R *74*1R *75*1R *76*1R ****
*70*84 *71*YN+ *73*1R *74*1R *77*1R ****
*70*85 *71*ZN+ *74*4I *75*4R *76*9R *77*9R *78*8R ****
*70*86 *71*DP+ *72*10 R *74*2 I *75*2R *76*7 R ****
*70*87 *71*GP+ *73*1R *76*1R ****
*70*88 *71*JP+ *74*1I *75*1R *76*1R ****
*70*89 *71*OP+ *72*12 R *76*11 R *77*8 R ****
*70*90 *71*QP+ *72*1 I *73*1 R *74*1 R *75*1 R ****
*70*91 *71*SP+ *72*1R *75*1R *76*1R *77*1R ****
*70*92 *71*STP+ *74*8I *75*8R ****
*70*93 *71*UP+ *74*1R *75*1R ****
*70*94 *71*WP+ *72*1R *73*1R ****
*70*95 *71*YP+ *73*1R *74*1R *75*1R *76*1R *77*1R ****
*70*96 *71*MQ+ *74*1I *75*1R *77*1R *78*1R ****
*70*97 *71*XNQ+ *74*8R *76*14 R ****
*70*98 *71*SQ+ *72*1I *73*1R *74*1R *75*1R *76*1R ****
*70*99 *71*XQ+ *72*1I *73*1R *74*1R *75*1R ****
*70*100 *71*CT+ *72*1I *73*1R *74*1I *75*1R *77*1I ****
*70*101 *71*DT+ *72*4I *73*4R *76*7R ****
*70*102 *71*FT+ *72*1R ****
*70*103 *71*OIT+ *74*9I *75*9R *76*19 R ****
*70*104 *71*LT+ *72*2R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*105 *71*CT+ *72*12I *73*6R *74*3I *77*8I ****
*70*106 *71*QT+ *72*2R *74*1I *75*1R *76*1R *77*1I ****
*70*107 *71*ST+ *72*1I *73*1R *74*1I ****
*70*108 *71*UT+ *72*1I *74*1R *75*1R ****
*70*109 *71*WT+ *74*1R *75*1R *76*1R *77*1I ****
*70*110 *71*XT+ *72*1R *74*1R *75*1R *76*1R *77*1R ****
*70*111 *71*XYT+ *74*8I *75*8R *76*14 R ****
*70*112 *71*BAV+ *74*8R *75*8R ****
*70*113 *71*LV+ *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
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*70*114 *71*XV+ *72*1I *73*1R *74*1I *75*1R *76*1R *77*1R ****
*70*115 *71*MLW+ *74*8I *75*8R *76*14 R ****
*70*116 *71*AX+ *72*1R *74*1R *77*1R ****
*70*117 *71*LAX+ *74*8I *75*8R ****
*70*118 *71*BX+ *72*1I *73*1R *74*1I *75*1R *76*1R. ****
*70*119 *71*CMBX+ *74*9R ****
*70*120 *71*OBX+ *74*9I *75*9R *76*19 R ****
*70*121 *71*CX+ *74*1R *75*1R ****
*70*122 *71*DX+ *72*1C I *73*4 R ****
*70*123 *71*FX+ *72*1I *73*1R ****
*70*124 *71*GX+ *72*1R *74*1I *76*1R *77*1I *78*1R ****
*70*125 *71*JX+ *72*1R *73*1R *76*1R *77*1I *78*1R ****
*70*126 *71*LNX+ *76*14 R ****
*70*127 *71*QX+ *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*128 *71*RX+ *72*1R *74*1I *75*1R *76*1R ****
*70*129 *71*XX+ *72*19 I, 33 I *73*11 R *74*1 I*76*1 R*77*1 I*78*12 R ****
*70*130 *71*YX+ *72*1I *77*1I ****
*70*131 *71*YX+ *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*132 *71*LY+ *73*1R *77*1R ****
*70*133 *71*MY+ *72*2R *73*1R *77*1I ****
*70*134 *71*FTY+ *74*8I *75*8R ****
*70*135 *71*XTY+ *74*8R *75*8R ****
*70*136 *71*XY+ *72*1R *74*1I *75*1R *76*1R ****
*70*137 *71*YY+ *74*1I *75*1R *76*13 R *77*1R ****
*70*138 *71*+Z+ *72*1R ****
*70*139 *71*DZ+ *72*1C R *74*2I *77*5R ****
*70*140 *71*XZ+ *74*1I *75*1R *76*1R *77*1R ****
*70*141 *71*ZZ+ *74*4I *75*5R ****
*70*142 *71*GHA+ *74*8I ****
*70*143 *71*MB+ *74*1I *75*1R ****
*70*144 *71*YC+ *74*1I *75*1R ****
*70*145 *71*FE+ *74*1R ****
*70*146 *71*AF+ *75*1R ****
*70*147 *71*CF+ *72*3R ****
*70*148 *71*OQG+ *74*9R *75*9 R ****
*70*149 *71*H+H+ *74*8R *75*8R ****
*70*150 *71*YI+ *74*6R *75*6R ****
*70*151 *71*ZI+ *74*4 I *75*4R ****
*70*152 *71*OK+ *74*3I *75*3R ****
*70*153 *71*MXK+ *74*8I *75*8R ****
*70*154 *71*YGL+ *74*8I *75*8R ****
*70*155 *71*HAN+ *74*8I *75*8R *76*14 R ****
*70*156 *71*MN+ *74*1I ****
*70*157 *71*LLT+ *74*8I *75*8R *76*14 R ****
*70*158 *71*OPT+ *74*9 I *75*9 R ****
*70*159 *71*UV+ *74*1 I ****
*70*160 *71*MCW+ *[illegible]*8R ****
*70*161 *71*CPW+ *74*8R *75*9R ****
*70*162 *71*AKX+ *74*8R ****
*70*163 *71*FKX+ *74*8R ****
*70*164 *71*WX+ *77*1 I *78*1 R ****
*70*165 *71*CY+ *77*1 R ****
*70*166 *71*XXY+ *74*8 I *75*8 R ****
*70*167 *71*CZ+ *74*3 R *75*3 R *76*8 R ****
*70*168 *71*X+A *73*1 R *74*1 I *75*1 R *76*1 R *77*1 R ****
*70*169 *71*Y+A *72*1 R *73*1 R *74*1 R *76*1 R *77*1 R *78*1 R ****
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*70*170*71*CBA*72*1 R*73*1 R****
*70*171 *71*XBA *72*1 R *73*1 R *75*1 R *76*1 R *77*1 R ****
*70*172 *71*+CA *72*1 I *74*1 I ****
*70*173 *71*CCA *72*1R *73*1R *74*7I, 1I *75*1R *76*13 R *77*1I *78*1R ****
*70*174 *71*DCA *72*10 I *74*2 I *75*2 R *76*7R *77*5I *78*5R ****
*70*175 *71*GCA *72*1R *74*1I *75*1R *76*1R ****
*70*176 *71*OGCA *74*9I ****
*70*177 *71*LCA *72*2 IR *73*1 R *74*1 R *75*1 R *76*1 R *77*1 I *78*1 R ****
*70*178 *71*WCA *72*1I *73*1R *74*1R *75*1I *78*1R ****
*70*179 *71*XCA *74*1I *75*1R *76*1R ****
*70*180 *71*DDA *72*10 R ****
*70*181 *71*LDA *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*182 *71*MDA *74*1 I *75*1 R *76*1 R ****
*70*183 *71*WDA *72*1 R *73*1 R *74*1 R *76*1 R *77*1 IR* *78*1 R ****
*70*184 *71*XDA *73*1 R *74*1 I *76*1 R *77*1 I *78*1 R ****
*70*185 *71*ZDA *77*1 R *78*8 R ****
*70*186 *71*+EA *72*15 R *77*11 I *78*9 R ****
*70*187 *71*CEA *72*15 R ****
*70*188 *71*FEA *72*15 I ****
*70*189 *71* JEA *73*8 R *77*11 I *78*9 R ****
*70*190 *71*QEA *72*15 I *73*8 R *74*5 I *76*10 R *77*11 I *78*9 R ****
*70*191 *71*XEA *72*15 R *77*11 I *78*9 R ****
*70*192 *71*XEA *74*3 I *75*3 R ****
*70*193 *71*YEA *72*15 R *73*8 R *74*5 I *76*10 R *77*10 I ****
*70*194 *71*+FA *72*1 I ****
*70*195 *71*FAFA *74*8 I *75*8 R *76*14 R ****
*70*196 *71*DFA *72*10 I *73*4 R *74*2 I *75*2 R *76*7 R *77*5 I ****
*70*197 *71*FFA *72*19 I, 1I *73*12 R, 1R *75*1R *76*13 R ****
*70*198 *71*BFA *72*1I *77*1R ****
*70*199 *71*WFA *72*1I *73*1R *75*1R *76*1R *77*1I ****
*70*200*71*XFA *72*1I *74*1I *75*1R ****
*70*201 *71*LGA *72*1R *74*1R *75*1R *77*1R ****
*70*202 *71*OGA *72*12 I *73*6R *74*3R *75*3R *76*8R *77*8I *78*7R ****
*70*203 *71*XGA *72*1I *73*1R *74*1R *75*1R *76*1R *77*1R *78*1R ****
*70*204 *71*YGA *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*205 *71*+HA *72*1R *73*1R *74*1I *75*1R *76*1R ****
*70*206 *71*HAHA *74*8R *76*14 R ****
*70*207 *71*DHA *72*10 I *73*4 R *75*2 R ****
*70*208 *71*GHA *72*1 R *73*1 R *74*1 I *75*1 R *76*1 R *77*1 I *78*1 R ****
*70*209 *71*LHA *72*2 R ****
*70*210 *71*OHA *72*13 I *74*3 I *75*3 R *77*8 I ****
*70*211 *71*YHA *72*1 I *74*1 I ****
*70*212 *71*AIA *74*6 I *75*6 R ****
*70*213 *71*MIA *74*6 I *75*6 R ****
*70*214 *71*OIA *72*18 I *73*9 R *74*5 I *76*11 R *77*12 I *78*10 R ****
*70*215 *71*UIA *74*6 I *75*6 R ****
*70*216 *71*XIA *74*6 R *75*6 R ****
*70*217 *71*YIA *74*6 I *75*6 R *76*1 R ****
*70*218 *71*ZIA *74*4 I *75*4 R *76*10 R ****
*70*219 *71*DKA *72*10 R *74*2 R *76*7 R *77*5 I ****
*70*220 *71*XKA *74*1 I *75*1 R *76*1 R *77*1 I ****
*70*221 *71*LALA *74*8 I *75*8 R *76*14 R ****
*70*222 *71* BLA *74*1 I *77*1 I *78*1 R ****
*70*223 *71*DLA *72*10 R *73*4 R *74*2 I *76*7 R *78*5 R ****
*70*224 *71*DIA *74*1 I ****
*70*225 *71*GLA *77*1 R *78*1 R ****
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*70*226 *71*HLA *72*1 R *76*1 R *77*1 I *78*1 R ****
*70*227 *71*ILA *72*19 I, 1I *73*1 R *74*7I *76*13 R *78*1 R ****
*70*228 *71*MLA *72*1 I *73*1 R *74*1 I *75*1 R *76*1 R *77*1 I ****
*70*229 *71*QLA *72*1I *74*1R ****
*70*230 *71*RLA *72*1 I *73*1 R *74*1 I *75*1 R *76*1 R *77*1 I *78*1 R ****
*70*231 *71*CBLA *74*8 R *75*8 R ****
*70*232 *71*WLA *72*1I *74*1I *75*1R *77*1I *78*1 R****
*70*233 *71*YLA *72*1I *74*1I *75*1R ****
*70*234 *71*DNA *74*2R *75*2R ****
*70*235 *71*DPA *72*1C R *73*4 R *74*2 I *75*2 R *76*7 R ****
*70*236 *71*DQA *72*10 I *75*2 R ****
*70*237 *71*MQA *72*1 R *74*1 R *75*1 R *76*1 R ****
*70*238 *71*QQA *72*1 R *74*1 I *75*1 R *76*1 R ****
*70*239 *71*XQA *72*1 I *74*1 I ****
*70*240 *71*RABA *74*8 I *76*14 R ****
*70*241 *71*DBA *72*10 R *73*4 R *77*5 I ****
*70*242 *71*HBA *72*1 I *73*1 R *74*1 I *76*1 R ****
*70*243 *71*LBA *72*1 I *73*1 R *76*1 R *77*1 I ****
*70*244 *71*UBA *74*1 I *75*1 R ****
*70*245 *71*XBA *72*1 I R *73*1 R *74*1 I *75*1 R *76*1 R *77*1 I *78*1 R ****
*70*246 *71*ZBA *73*7 R *74*4 I *76*9 R *77*9 I *78*8 R ****
*70*247 *71*UAVA *74*8 R *75*8 R *76*14 R ****
*70*248 *71*LVA *74*1 R *75*1 R *77*1 R ****
*70*249 *71*RVA *72*1 I *74*1 I *75*1 R *76*1 R ****
*70*250 *71*UVA *72*1 I *76*1 R ****
*70*251 *71*WVA *72*2 R *73*1 R *76*1 R ****
*70*252 *71*XVA *72*1 I *73*1 R *74*1 I *75*1 R *76*1 R ****
*70*253 *71*WAWA *74*8 R ****
*70*254 *71*DWA *72*10 R ****
*70*255 *71*RWA *72*1 I *73*1 R *74*1 I *75*1 R *76*1 R *77*1 I *78*1 R ****
*70*256 *71*WWA *72*1I,19 I *73*11R *74*7I *75*7R *76*13R,1R *77*1I ****
*70*257 *71*XWA *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*258 *71*YWA *74*1I *75*1R *76*1R ****
*70*259 *71**XA *72*1I *73*1R *74*1I *77*1R *78*1R ****
*70*260 *71*BXA *72*1I *73*1R *74*1R *75*1R *76*1I *77*1R *78*1R ****
*70*261 *71*OBXA *76*19 R ****
*70*262 *71*CXA *72*1R *73*1R ****
*70*263 *71*DXA *72*10 I *74*2 R *77*5 I ****
*70*264 *71*FXA *72*1I *74*1I *75*1R ****
*70*265 *71*LFXA *74*8I *75*8R ****
*70*266 *71*GXA *72*1R *76*1R *77*1I *78*1R ****
*70*267 *71*JXA *72*1I *73* R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*268 *71*QXA *77*1R ****
*70*269 *71*UXA *73*1R *74*1I *75*1R ****
*70*270 *71*WXA *72*1I *73*1R *76*1R *77*1R *78*1R ****
*70*271 *71*XXA *72*1I,19I *73*1R,11R *74*1I *75*1R *76*1R *77*14I,1I *78*1R****
*70*272 *71*YXA *74*1I *75*1R *76*1R ****
*70*273 *71*ZXA *72*14 R *74*4 R *77*9 R ****
*70*274 *71*LYA *72*2R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*275 *71*MYA *74*1I *75*1R *76*1R *77*1I ****
*70*276 *71*QYA *74*7I ****
*70*277 *71*XYA *72*1R *74*1I *75*1R *76*1R ****
*70*278 *71*YYA *74*7R ****
*70*279 *71*WZA *74*1 I *75*1 R ****
*70*280 *71*XZA *72*1 I *73*1 R *74*1 I *75*1 R *76*1 R ****
*70*294 *71*D*B *72*1C R *74*2 I *76*7 R ****
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*70*295 *71*L*B *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*296 *71*AAB *72*19I, 1I *73*1R *74*7I, 1I *75*1R *76*1R ****
*70*297 *71*DAB *72*10 I *73*4 R *77*5 I ****
*70*298 *71*DAB *72*2 R *73*1 R *76*1 R *77*1 I *78*1 R ****
*70*299 *71*GAB *74*1 I *75*1 R ****
*70*300 *71*LAB *72*1 I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*301 *71*OAB *74*3I *75*3R *76*8R *77*8I ****
*70*302 *71*OPAB *74*9I *75*9R *76*19 R ****
*70*303 *71*QAB *73*1R *74*1I *75*1R ****
*70*304 *71*RAB *74*1I *75*1R ****
*70*305 *71*XAB *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*306 *71*YAB *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*307 *71*CCB *72*19IR,1IR *73*1R *74*1I *75*1R *76*13R ****
*70*308 *71*LCB *72*1IR,2IR *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*309 *71*MCB *72*1I *73*1R *74*1I *76*1R ****
*70*310 *71*OCB *75*3R ****
*70*311 *71*RCB *72*1I *73*1R *74*1I *75*1R *78*1R ****
*70*312 *71*SCB *74*1I *75*1R *76*1R ****
*70*313 *71*XCB *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*314 *71*YCB *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*315 *71*DDB *72*10I *77*5I ****
*70*316 *71*UDB *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*317 *71*WDB *72*1I *74*1I *77*1R ****
*70*318 *71*XDB *72*1R *73*1R *77*1R *78*1R ****
*70*319 *71*AEB *77*11I *78*9R ****
*70*320 *71*CEB *72*15 I ****
*70*321 *71*FEB *72*15 IR *73*8R *77*11 I ****
*70*322 *71*MEB *72*15 R ****
*70*323 *71*OEB *74*3I *75*3R *76*8R *77*8R ****
*70*324 *71*QEB *72*15I *77*11 I ****
*70*325 *71*REB *72*1R *77*1I ****
*70*326 *71*SEB *72*15I *77*11I *78*9R ****
*70*327 *71*XEB *72*15R *77*11R ****
*70*328 *71*DFB *72*10 I ****
*70*329 *71*FFB *72*19I, 1I *73*12R, 1R *74*1R ****
*70*330 *71*LFB *72*1I *73*1R ****
*70*331 *71*MFB *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*332 *71*RFB *72*1R *73*1R *77*1R ****
*70*333 *71*SFB *73*1R ****
*70*334 *71*XFB *72*1I *73*1R *74*1R *76*1R ****
*70*335 *71*DGB *72*10 R ****
*70*336 *71*JGB *72*1R *74*4R *75*1R *76*1R ****
*70*337 *71*LGB *72*1R *73*1R *74*1R *77*1R ****
*70*338 *71*OGB *72*12R *77*8I ****
*70*339 *71*BIB *74*6R *75*6R ****
*70*340 *71*CIB *74*6I *75*6R *76*1R ****
*70*341 *71*FIB *74*6R *75*6R *76*1R ****
*70*342 *71*GIB *72*17 R *77*11 R ****
*70*343 *71*LIB *72*17 R *77*11 R ****
*70*344 *71*QIB *74*6I *75*6R *76*1R ****
*70*345 *71*SIB *74*6R *75*6R ****
*70*346 *71*UIB *74*6I *75*6R ****
*70*347 *71*XIB *74*6I *75*6R *76*1R ****
*70*348 *71*ALB *74*1R ****
*70*349 *71*BLB *72*1R ****
*70*350 *71*LBLB *74*8I *75*8R *76*14 R ****
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*70*351 *71*CLB *72*1R *73*1R *77*1IR *78*1R ****
*70*352 *71*DLB *72*1CI *73*4R *74*2I *75*2R *76*7R *77*5I *78*5R ****
*70*353 *71*OELB *74*9I *75*9R *76*19 R ****
*70*354 *71*GLB *74*1I *75*1R *76*1R ****
*70*355 *71*LLB *72*19I*73*12R,1R*74*7I,1I*75*7R,1R*76*13R,1R*77*14I*78*1R****
*70*356 *71*MLB *72*1I *73*1R *74*1R *76*1R *77*1I *78*1R ****
*70*357 *71*RLB *73*1R *74*1R *76*1R *77*1I ****
*70*358 *71*SLB *72*1I *73*1R *74*1I *75*1R ****
*70*359 *71*YLB *72*1R *73*1R *76*1R *77*1I *78*1R ****
*70*360 *71**NB *74*1I *77*1I *78*1R ****
*70*361 *71*MENB *74*8R *75*8R *76*14 R ****
*70*362 *71*CNB *72*1I *73*1R *74*1R *76*1R ****
*70*363 *71*DNB *72*1CR *74*2R *75*2R *78*5R ****
*70*364 *71*FNB *74*1I *75*1R ****
*70*365 *71*LNB *72*1IR *73*1R *74*1R *75*1R *76*1R *77*1I *78*1R ****
*70*366 *71*MNB *72*19I,1I *73*1R *74*1I *75*1R ****
*70*367 *71*RNB *72*1I *73*1R *74*1I *78*1R ****
*70*368 *71*UNB *75*1R ****
*70*369 *71*XNB *72*1I *73*1R *74*1I *76*1R *77*1R *78*1R ****
*70*370 *71*YNB *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*371 *71*APB *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*372 *71*XCPB *74*8I *75*8R *76*14R ****
*70*373 *71*DPB *74*2I *75*2R *76*7R ****
*70*374 *71*FPB *72*1 R*73*1 R*76*1 R****
*70*375 *71*GPB *72*1R *76*1R ****
*70*376 *71*OPB *72*19I *74*3I *76*11R *77*15I *78*12R ****
*70*377 *71*DQB *72*10R *76*7R ****
*70*378 *71*QQB *72*1R *76*1R,13R *77*14I ****
*70*379 *71*RPRB *74*8I *76*14 R ****
*70*380 *71*DRB *72*10 R ****
*70*381 *71*LRB *72*1I *73*1R *74*1R *75*1R *76*1R *77*1I *78*1R ****
*70*382 *71*XRB *72*1R *73*1R *74*1R *75*1R *77*1R ****
*70*383 *71*YRB *72*1R *75*1R *76*1R *77*1I ****
*70*384 *71*LTB *74*1I ****
*70*385 *71*QTB *73*1R *74*1I *75*1R ****
*70*386 *71*STB *74*1I *75*1R *76*1R ****
*70*387 *71*XTB *74*1I *75*1R *76*1R ****
*70*388 *71*ZTB *74*4R *75*4R ****
*70*389 *71*UVB *74*1R ****
*70*390 *71*AXB *72*1I *73*1R *74*1R *76*1R ****
*70*391 *71*XBXB *74*8I *78*8R *76*14R ****
*70*392 *71*CXB *72*1I *73*1R *74*1R *75*1R *76*1R *77*1R ****
*70*393 *71*MCXB *74*8I *75*8R ****
*70*394 *71*DXB *74*2I *75*2R *76*7R *77*5R ****
*70*395 *71*FXB *72*1R *73*1R ****
*70*396 *71*OFXB *74*9R *75*9R ****
*70*398 *71*MXB *72*1I *73*1R *74*1I *75*1R *77*1I *78*1I ****
*70*399 *71*OXB *72*13I *74*3R *77*8I ****
*70*400 *71*QXB *72*1I *73*1R *74*1I *75*1R *77*1I *78*1R ****
*70*401 *71*RXB *72*1IR *73*1R *74*1I *75*1R *76*1R *77*1R ****
*70*402 *71*CHXB *74*9I *75*9R *76*19R ****
*70*403 *71*SXB *72*1I *73*1R *74*1R *75*1I ****
*70*404 *71*XXB *72*19 I, 1I *73*1R *74*1I *75*1R *76*1R, 13R *77*1R *78*1R ****
*70*405 *71*YXB *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*406 *71*YBYB *74*8R ****
*70*407 *71*MYB *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
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*70*408 *71*XYB *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*409 *71*YYB *72*1R *73*1R *74*1I *76*[illegible]R ****
*70*410 *71*ZYB *74*4R *75*4R ****
*70*419 *71*A+C *72*1R *73*1R *77*1I ****
*70*420 *71*B+C *72*1R *73*1R *76*1R *77*1I *78*4R ****
*70*421 *71*D+C *72*1CR *77*5I ****
*70*422 *71*+AC *72*1R *77*1R ****
*70*423 *71*AAC *72*1R *74*7I,1I *75*1R *76*13R ****
*70*424 *71*DAC *74*2R ****
*70*425 *71*LLAC *74*8I *75*8R ****
*70*517 *71*LAC *74*1R ****
*70*426 *71*WAC *72*1 R   *73*1R *74*1I *75*1R *76*1R,6R *77*1I *78*1R ****
*70*427 *71*WWAC *74*8R *76*18R ****
*70*428 *71*XAC *72*1I *73*1R *74*1I *75*1R *76*6R *77*1I *78*1R ****
*70*429 *71*YAC *72*1I *75*1R *77*1I ****
*70*430 *71*BCBC *74*8I *75*8R ****
*70*431 *71*DBC *72*1CR *76*4R *77*5I ****
*70*432 *71*LBC *72*1I *73*1R *74*1I *75*1R *77*1I *78*1R ****
*70*433 *71*MBC *72*1I *74*1R *7K*1R *77*1I *78*1R ****
*70*434 *71*CBC *73*6R *74*3I *75*3R ****
*70*435 *71*XBC *72*1I *73*1R *77*1I *78*1R ****
*70*436 *71*YBC *72*1R *73*1R *74*1I *77*1I *78*1R ****
*70*438 *71*MCC *76*6R ****
*70*439 *71*ADC *72*1I *77*1I ****
*70*440 *71*DDC *72*10R *73*4R *74*2R *77*5I ****
*70*441 *71*MDC *73*1R *77*1I *78*1R ****
*70*442 *71*CDC *73*6R *74*3I *75*3R ****
*70*443 *71*XDC *72*1R *74*1R *77*1I *78*1R ****
*70*444 *71*BEC *72*15 I ****
*70*445 *71*DEC *72*1C R *73*4R *78*6I ****
*70*446 *71*GEC *72*15R *73*8R,10R *77*11 I *78*9R ****
*70*518 *71*GEC *74*1R *75*1R ****
*70*447 *71*JEC *72*15 I *73*8R, 10 R ****
*70*448 *71*MEC *72*15 R ****
*70*449 *71*CEC *72*16 I *73*9R, 10 R ****
*70*450 *71*UEC *72*15 R *77*11 I ****
*70*451 *71*WEC *72*15 R ****
*70*452 *71*XEC *72*15 R ****
*70*453 *71*YEC *72*15 I *73*8 R, 10R *77*11 R *78*9 R ****
*70*454 *71*YEC *74*1I ****
*70*455 *71*DGC *72*1CI *73*4R *74*2R *75*2R *76*24R*77*5I *78*5R ****
*70*456 *71*GGC *73*13 R ****
*70*519 *71*JGC *72*1R ****
*70*457 *71*LGC *72*1R ****
*70*458 *71*QGC *72*1I *73*1R *74*1R *76*1R *77*1I *78*1R ****
*70*459 *71*SGC *72*1I *73*1R *7K*1R ****
*70*460 *71*WGC *72*1I *73*1R *74*1R *77*1I ****
*70*461 *71*AIC *74*6R, 9R *77*11 R ****
*70*462 *71*BIC *72*17 I *74*6I ****
*70*463 *71*CIC *72*18 I *73*9R,  10R *74*3R *76*23R****
*70*464 *71*SIC *74*6I *75*6R ****
*70*465 *71*WIC *74*6R *75*6R ****
*70*466 *71*XIC *74*6I *76*6R ****
*70*467 *71*YIC *74*6I *75*6R ****
*70*468*71*ZIC*74*4 I*75*4 R*76*21 R****
*70*469 *71*+KC *73*1R *74*1I *75*1R *76*6R *77*1R ****
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*70*470 *71*JCKC *74*8I *75*8R ****
*70*471 *71*DKC *72*1C R *73*4R *74*2I *75*2R ****
*70*472 *71*JKC *73*13 R *74*1I *75*1R ****
*70*473 *71*BLC *7I*1R *74*1R *75*1R *76*1R, 6R ****
*70*474 *71*LCLC *74*8I *75*8R *76*14R, 18R ****
*70*475 *71*DLC *72*10I *73*4R *74*2I *77*5I *78*5R ****
*70*476 *71*GLC *72*1I *73*1R *77*1I *78*1R ****
*70*520 *71*XHLC *74*8R *75*8R ****
*70*477 *71*LLC *72*2C R *73*1R, 11R *74*1I *75*1R *77*15 I, 1 I ****
*70*478 *71*SLC *72*1R *73*1R ****
*70*479 *71*WLC *72*1IR, 2IR *73*1R *77*1I *78*1R ****
*70*480 *71*MCNC *74*8R *75*8R ****
*70*481 *71*DNC *72*10 R *73*4R *74*2I *75*2R *76*24R****
*70*521 *71*OINC *74*9R *75*9R ****
*70*482 *71*JNC *72*1R *73*1R ****
*70*483 *71*LNC *72*1R ****
*70*484 *71*MNC *72*20 I, 33 I *73*11 R *74*7 I,1 I *77*14 I, 1 I ****
*70*485 *71*ONC *74*3I *75*3R ****
*70*486 *71*QNC *72*1R ****
*70*487 *71*RNC *72*1R *73*1R *74*1I *75*1R *76*1R *77*1R ****
*70*488 *71*BFC *74*1I *75*1R ****
*70*489 *71*JRC *72*1I R *73*1R *74*1I *75*1R *77*1I ****
*70*490 *71*URC *  *1R ****
*70*491 *71*SCTC *74*8I *76*14 R, 18 R****
*70*492 *71*DTC *72*1C R *74*2 I ****
*70*493 *71*MLTC *74*8I *75*8R ****
*70*494 *71*OTC *72*12I *74*3I *75*3R *  *8 R ****
*70*495 *71*QTC *72*1I *73*1R *77*1I *78*1R ****
*70*522 *71*STC *74*1I *75*1I ****
*70*496 *71*WTC *72*1I *73*1R *74*1R *76*1R *77*1I ****
*70*497 *71*XZTC *74*8I *75*8R ****
*70*498 *71*WCWC *74*8I *75*8R *76*18R, 14R ****
*70*499 *71*BLWC *74*8I *75*8R ****
*70*500 *71*WWC *72*2CI, 19I *73*11 R *76*6R *77*14 I *78*12 R ****
*70*501 *71*XWC *72*1I *73*1R *74*1I *75*1R *77*1I ****
*70*502 *71*XXWC *74*8R *75*8R ****
*70*503 *71**XC *77*1R *78*1R ****
*70*504 *71*OAXC *74*9I *75*9R *76*19R ****
*70*505 *71*BXC *72*1R *74*1I *75*1R *76*1R *77*1R *78*[illegible]R ****
*70*523 *71*WCXC *74*8I ****
*70*506 *71*XCXC *74*8I *75*8R *76*18R ****
*70*508 *71*HXC *77*1R *78*1R ****
*70*509 *71*OXC *77*8R ****
*70*510 *71*QXC *72*1I *73*1R *74*1I ****
*70*511 *71*XXC *72*1I *77*1I *78*1R ****
*70*512 *71*YXC *72*1I *73*1R *76*1R ****
*70*513 *71**YC *72*1R *73*1R *77*1I *78*1R ****
*70*514 *71*YCYC *74*8R *75*8R *76*14 R ****
*70*515 *71*OYC *72*13R *73*6R *74*3I *75*3R *76*8R,22R *77*8I ****
*70*516 *71*YYC *72*19 I, 1I ****
*70*524 *71*ADAD *74*9R *75*8R *76*14 R ****
*70*525 *71*LAD *72*[illegible] *74*1I *75*1R *77*1R ****
*70*526 *71*XAD *72*1I *73*1R ****
*70*527 *71*BBD *74*1R *75*1R ****
*70*528 *71*DBD *72*1C I *73*4R *75*2R *77*5R ****
*70*529*71*CBD*72*12 R****
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*70*530 *71*XBD *72*2 R ****
*70*531 *71*CCD *74*1R *75*1R *76*1R ****
*70*532 *71*DCD *72*10I ****
*70*533 *71*CDCD *74*8R *75*8R *76*14 R ****
*70*534 *71*JCD *72*1I *73*1R *77*1R ****
*70*535 *71*MCD *74*1I *75*1R ****
*70*536 *71*QCD *74*1IR *75*1R ****
*70*537 *71*SCD *72*1I *73*1R *75*1R ****
*70*538 *71*WCD *72*1I *74*1I *75*1R *76*1R ****
*70*539 *71*XCD *72*2I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*540 *71*+ED *72*10R *73*4R *74*2I ****
*70*541 *71*CED *74*5R *75*5R *76*10 R ****
*70*542 *71*DED *72*40 R *74*2I *75*2R *76*7R ****
*70*543 *71*MED *72*15 I R *73*10 R *77*10 I ****
*70*544 *71*ZED *74*4 R ****
*70*545 *71*DFD *72*10 R ****
*70*546 *71*DID *72*1C R *73*14 R *74*2I ****
*70*547 *71*MID *72*15 I R *73*10 R *77*1C I ****
*70*548 *71*OID *72*18 R *77*12 R ****
*70*549 *71*XID *72*17 R ****
*70*550 *71*XKD *72*1 R ****
*70*551 *71*+LD *73*1 R *74*1 R ****
*70*552 *71*JLD *72*1 R*73*1R *74*1R *76*1R         ****
*70*553 *71*LID *72*19 R *74*1I *75*1R *76*1R *77*14 I, 1R ****
*70*554 *71*MLD *72*1I *73*1R *74*1R *75*1R *77*1R ****
*70*555 *71*HWLD *74*8I *76*14 R ****
*70*556 *71*DND *72*1CR *74*2R *75*2R ****
*70*557 *71*MDND *74*8R *75*8R ****
*70*558 *71*MGND *74*8R ****
*70*559 *71*MND *72*19 I *73*12 R, 1R *74*7I, 1I *75*1R ****
*70*560 *71*OND *72*12 R *76*8 R ****
*70*561 *71*XND *74*1R *76*1R ****
*70*562 *71*QCPD *74*8R ****
*70*563 *71*DPD *72*1CR *73*4R *74*2I *76*7R *77*5I ****
*70*580 *71*WQPD *74*8R ****
*70*564 *71*DQD *72*1CR *74*2R *76*7R *77*5I ****
*70*565 *71*QDQD *74*8R ****
*70*566 *71*MQD *74*1R ****
*70*567 *71*QQD *74*1R ****
*70*568 *71*JTD *72*1I *73*1R *74*1I *75*1R *76*1R *78*1R ****
*70*569 *71*HPTD *74*8I *75*8R ****
*70*570 *71*RVWD *75*8R ****
*70*571 *71*BXD *72*1I *73*1R *75*1R ****
*70*572 *71*DXD *72*1CI *75*2R ****
*70*573 *71*XDXD *74*8IR *75*8R *76*14 R ****
*70*574 *71*ONXD *74*9I *76*19 R ****
*70*575 *71*CXD *72*1I *73*1R *74*1I ****
*70*576 *71*SXD *74*1R ****
*70*577 *71*JZD *74*1I *75*1R ****
*70*578 *71*LZD *74*1I *75*1R ****
*70*579 *71*ZZD *72*14 R ****
*70*581 *71*+CE *74*1I *75*1R ****
*70*582 *71*DCE *74*2I *75*2R *76*7R ****
*70*583 *71*RCE *74*1I *76*2R ****
*70*584 *71*GKE *74*1R *76*2R ****
*70*585 *71*CLE *74*3I *75*3R ****
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*70*586 *71*ZQE *74*4I *75*4R *76*9R ****
*70*587 *71*CBE *74*1I *75*1R *76*1R ****
*70*588 *71*CXE *74*1R *75*1R *76*1R *77*1IR ****
*70*589 *71*WZE *74*1I *76*1R ****
*70*590 *71*XZE *74*1R *76*1R ****
*70*591 *71*CAF *72*1I *73*1R *74*1I *75*1R *77*1I ****
*70*592 *71*GAF *72*1I *73*1R *74*1I *75*1R ****
*70*593 *71*LAF *72*1I *73*1R *74*1I *75*1R *76*3R *77*1R *78*1R ****
*70*594*71*CAF*72*12 I*74*3 I*76*24 R****
*70*595 *71*BBF *74*1I *75*1R *76* 3R ****
*70*596 *71*BFBF *74*8I *75*8R ****
*70*597 *71*ADF *72*1R *74*1R *75*1R *77*1R *78*1R ****
*70*598*71*DDF*72*10 R*74*2 I*75*2 I*76*23 R****
*70*599*71*DDF*77*1 R****
*70*600 *71*MDF *73*1R *74*1I *75*1R *76*3R *77*1I *78*1R ****
*70*601 *71*XDF *72*1R *73*1R *74*1I *75*1R *76*3I *77*1IR *78*1R ****
*70*602 *71*AEF *72*15 R *77*11I ****
*70*603 *71*BEF *74*1I *75*3R *76*3R *77*1R *78* 1R ****
*70*604 *71*CEF *72*15 R *77*11 I R ****
*70*605 *71*DEF *74*2I *75*2R ****
*70*606 *71*FEF *72*15 R *77*11 I *78*9 R ****
*70*607 *71*GEF *72*15 R ****
*70*609 *71*OEF *72*16 I *73*9R, 10R *77*12 I *78*1C R ****
*70*610 *71*REF *72*15 R *77*11 I ****
*70*611 *71*XEF *72*15 I R *73*8 R *74*5I *75*5R *78*9R ****
*70*612 *71*GGF *73*11R, 13R *77*15 I,1R *78*1R ****
*70*613 *71*LGF *72*1R *73*1R *76*3R *77*1IR *78*1R ****
*70*614 *71*LLGF *74*8R *76*15 R ****
*70*615 *71*BIF *74*6R *75*6R ****
*70*616 *71*OIF *72*18 R ****
*70*617*71*OIF*74*3 I*75*3 R*76*24 R****
*70*618 *71*SIF *74*6I *75*6R *76*3R ****
*70*619*71*DKF*72*10 R*74*2 I*75*2 R*76*23 R****
*70*620 *71*JFKF *74*8I *75*8R ****
*70*621 *71*JKF *72*19R *74*1I *75*1R *76*3R *77*14I *78*12R ****
*70*622 *71*XKF *72*1I *73*1R *74*1I *76*3R *77*1I *78*1R ****
*70*623 *71*BLF *72*1I *73*1R *76*3R ****
*70*624 *71*LFLF *74*8R *75*8R *76*15 R ****
*70*625 *71*GLF *72*1I *74*1I *75*1R ****
*70*626 *71*LLF *72*1I *73*12R *74*1I *77*1I ****
*70*627 *71*SRLF *74*8I *75*8R ****
*70*628 *71*SLF *72*1I *73*1R *74*1I *75*1R *76*3R *77*1I *78*1R ****
*70*629 *71*MFNF *74*8R *75*15 R ****
*70*630 *71*MNF *72*19 I,1I *73*11R,13R *74*1I *75*1R *76*3R *77*14I *78*12R,1R
 ****
*70*631*71*ONF*73*6 R*74*3 I*75*3 R*76*14 R*77*8 2*78*7 R****
*70*632 *71*XNF *72*1I *73*1R *74*1IR *75*1R *76*3R *77*1I ****
*70*633 *71*XXNF *74*8R *75*8R ****
*70*634 *71*APF *74*1I *75*1R *76*3R ****
*70*635 *71*DPF *72*1CR *73*4R *74*2R *75*3R *77*5I *78*5R ****
*70*636 *71*GPF *72*1I *73*1R *75*1R *77*1I *78*1R ****
*70*637 *71*OPF *74*3R ****
*70*638 *71*WPF *74*1R *76*3R ****
*70*639 *71*ARF *72*1I ****
*70*640 *71*RFRF *74*8I *75*8R *76*14 R ****
*70*641 *71*JRF *72*1I *73*1R *74*1I ****
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*70*642 *71*MBF *72*1IR *73*1R *75*1R *77*1I ****
*70*643 *71*SRF *72*1R *73*1R *74*1IR *76*3R *77*1I ****
*70*644 *71*WBF *72*1R *73*1R *76*3R *77*1I *78*1R ****
*70*645 *71*STF *73*1R *74*1I *75*1R ****
*70*646 *71*WTF *74*1R *75*1R ****
*70*647 *71*ZFF *72*14 I *73*7R *74*4I *75*4R ****
*70*648*71*OWF*72*13 R*75*3 R*76*24 R*77*8 R*78*7 R****
*70*649 *71*SWF *72*1I *73*1R *75*1R *76*3R *77*1I *78*1R ****
*70*650 *71*WWF *72*19I,33I *73*1R *74*1I *75*1R *76*3 R *77*1I *78*1R ****
*70*651 *71*XWF *72*1I *73*1R *76*3R ****
*70*652 *71*AXF *72*1R *75*1R ****
*70*653 *71*CXF *72*1I *74*1I ****
*70*654 *71*DXF *72*10I *73*4R *74*2I *75*2R ****
*70*655 *71*FXF *74*1I *75*1R *76*3R ****
*70*656 *71*SFXF *74*8R ****
*70*657 *71*XFXF *74*8R *75*8R ****
*70*658 *71*GXF *72*1R *73*1R *76*3R *77*1I *78*1R ****
*70*659 *71*MXF *72*1R *73*1R *74*1I *75*1R *76*3R *77*1I *78*1R ****
*70*660 *71*RXF *72*1I *73*1R *74*1R *77*1I ****
*70*661 *71*WXF *72*1I *73*1R *74*1I *75*1R *77*1I *78*1R ****
*70*662 *71*XXF *74*7I ****
*70*663 *71*ZXF *74*4I ****
*70*664 *71*UXYF *74*8R *75*8R ****
*70*670 *71*+AG *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*671 *71*AAG *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*672 *71*DAG *72*10 R         4R****
*70*673 *71*HAG *72*1I *73*1R *74*1I *76*1R ****
*70*674 *71*LAG *72*1R *73*1R *74*1I *75*1R *76*1R *78*1R ****
*70*675 *71*QAG *72*1I *73*1R ****
*70*676 *71*UAG *74*1I *75*1R *77*1R ****
*70*677 *71*WAG *72*1I *73*1R *74*1I  *75*1R *76*1R ****
*70*678 *71*XAG *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*679 *71*YAG *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*680 *71*BBG *72*19I,1R *78*12R ****
*70*681 *71*XBG *72*1IR *73*1R *75*1R *76*1R *77*1R ****
*70*682 *71*CCG *72*19R *74*1I *75*1R *76*1R *77*14 I *78*12R ****
*70*683 *71*DCG *72*10R *73*4R *74*2I ****
*70*684 *71*LCG *72*2R *73*1R *74*1R *77*1I ****
*70*685 *71*WCG *73*1R *74*1I *76*1R ****
*70*686 *71*XCG *72*1R *73*1R *76*1R *77*1I *78*1R ****
*70*687 *71*YCG *74*1I *75*1R *76*1R ****
*70*688 *71*AEG *72*15R *76*10R ****
*70*689 *71*BEG *72*15R *76*13R ****
*70*690 *71*CEG *72*15R ****
*70*691 *71*DEG *72*1CI *74*2I *75*2R *77*5I ****
*70*692 *71*FEG *77*10R ****
*70*693 *71*LEG *72*15R *74*5IR *75*5R *76*10R *77*10R *78*9R ****
*70*694 *71*QEG *72*15I ****
*70*695 *71*SEG *72*15I ****
*70*696 *71*UEG *72*15I ****
*70*697 *71*XEG *72*2R *74*1I *75*1R *76*1R *77*1I ****
*70*698 *71*YEG *72*15R *77*1CI *78*9R ****
*70*699 *71*ZEG *72*22R ****
*70*700 *71*DFG *72*1CI ****
*70*701 *71*FFG *72*1I *74*1I ****
*70*702 *71*MFG *72*1I *77*1R ****
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*70*703 *71*CPG *74*3R *76*8R ****
*70*704 *71*WPG *72*2R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*705 *71*XPG *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*706 *71*+HG *72*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*707 *71*AHG *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*708 *71*DHG *74*2I *75*2R ****
*70*709 *71*HGHG *74*8R ****
*70*710 *71*HHG *72*1R *73*1R *74*1I *75*1R *76*13R, 1R ****
*70*711 *71*MHG *72*1R, 2R *74*1R ****
*70*712 *71*SHG *72*1I *73*1R *74*1I *76*1R *77*1I *78*1R ****
*70*713 *71*XHG *72*1I *75*1R ****
*70*714 *71*AIG *74*6I *75*6R *76*1R ****
*70*715 *71*DIG *72*1CI *74*2I *75*2R *76*7R *77*5I *78*5R ****
*70*716 *71*HIG *74*6I *75*6R *76*1R ****
*70*717 *71*JIG *74*6R *76*1R ****
*70*718 *71*LIG *72*17 R *74*5IR,6R *75*5R,6R *76*10R,1R *77*10I *78*9R ****
*70*719 *71*UIG *74*6I *75*6R ****
*70*720 *71*YIG *72*15R *77*1CI *78*9R ****
*70*721 *71*ZIG *72*34 R ****
*70*722 *71*DKG *72*1CR *74*2IR *75*2R ****
*70*723 *71*JKG *72*1I *74*1I *75*1R *76*1R ****
*70*724 *71*LLKG *74*8I *76*14 R ****
*70*725 *71*MKG *72*2R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*726 *71*XKG *72*1I *77*1I *78*1R ****
*70*727 *71*+LG *72*1R *77*1IR ****
*70*728 *71*ALG *72*1I *73*1R *77*1I ****
*70*729 *71*CLG *72*1I *73*1R *74*1I *75*1R *76*1R *77*1IR *78*1R ****
*70*730 *71*DLG *72*10R *73*4R *74*2I *75*2R *76*7R *77*5I *78*5R ****
*70*731 *71*OPLG *74*9I *75*9R *76*19 R ****
*70*732 *71*LGLG *74*8R *75*8R *76*14 R ****
*70*733 *71*HLG *72*1I *73*1R *74*1I *75*1R *77*1R *78*1R ****
*70*734 *71*LLG *72*19 R, 1R *73*13 R, 1R *74*7I, 1I *75*7R, 1R *76*13 R, 1R *77
*14 I R *78*12 R ****
*70*735 *71*MLG *72*1I, 3I *73*1R *77*1I *78*1R ****
*70*736 *71*SLG *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*737 *71*ULG *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70* 738 *71*WLG *72*1 IR *73*1R *74*1I *75*1R *76*1R *77*1R *78*1R ****
*70*739 *71*ZLG *72*1 IR, 3IR *73*1R *74*1R *75*1R *76*1R *77*1I *78*1R ****
*70*740 *71*+NG *77*1R *78*1R ****
*70*741 *71*CNG *72*1I *73*1R *74*1I *76*1R *77*1I ****
*70*742 *71*HNG *72*2R ****
*70*743 *71*LNG *72*1R ****
*70*744 *71*MNG *72*2C R, 19 R *73*13 R, 1R *74*1I *75*1R *76*1R *77*14 I *78*12
 R ****
*70*745 *71*QNG *72*1I *73*1R *74*1I ****
*70*746 *71*RNG *74*1I ****
*70*747 *71*UNG *72*2R *74*1I *75*1R *76*1R *77*1R *78*1R ****
*70*748 *71*CVNG *74*9I *75*9R *76*19 R ****
*70*749 *71*WNG *72*2R *76*1R *77*1I *78*1R ****
*70*750 *71*XNG *72*1I, 2I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*751 *71*XNXNG *75*8R *76*14 R ****
*70*752 *71*YNG *72*1I *74*1I *75*1R *76*1R *77*1R        1R ****
*70*753 *71*APG *72*1R ****
*70*754 *71*BPG *72*1R *74*1R ****
*70*755 *71*DPG *72*10R *74*2R *77*5I *78*5R ****
*70*756 *71*OGPG *74*9 IR *76*19 R ****
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*70*757 *71*HPG *72*1I *73*1R *77*1I ****
*70*758 *71*JPG *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*759 *71*JKPG *74*8R *75*8R ****
*70*760 *71*CKPG *74*9B *75*9B ****
*70*761 *71*OPG *72*19 I, 2I *73*13 R, 1R *74*7I, 1I *75*7R, 1R *76*13 R, 1R *78
*12 R ****
*70*762 *71*SPG *72*1 R, 3 R   *76*1R *77*1 IR ****
*70*763 *71*WPG *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*764 *71*OWPG *74*9I *75*9R *76*19 R ****
*70*765 *71*CQG *72*1R *74*1I *75*1R *76*1R ****
*70*766 *71*DQG *72*1CR *73*4R *74*2I ****
*70*767 *71*JQG *72*1I *73*1R *74*1I *75*1R ****
*70*768 *71*LQG *72*1I *73*1R *74*1I *75*1R *76*1R *78*1R ****
*70*769 *71*MQG *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*770 *71*OQG *72*12B *73*6B *74*3I *75*3R *76*8I *77*7I *78*7R ****
*70*771 *71*SQG *72*1I *74*1R ****
*70*772 *71*CTQG *74*8I *75*8B *76*14 R ****
*70*773 *71*XQG *72*2 IR *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*774 *71**TG *74*1I *77*1R ****
*70*775 *71*DTG *72*10I *73*4R *74*2I *75*2R *76*7R ****
*70*776 *71*FTG *72*1R *73*1R *74*1I *75*1R *77*1I ****
*70*777 *71*CTG *72*12 I *73*6R ****
*70*778 *71*STG *72*19 I, 1I *74*7I, 1I *75*7R, 1R *76*13 R ****
*70*779 *71*UTG *72*1I *73*1R ****
*70*780 *71*XTG *72*1R, 2R *73*1R *76*1R *77*1R *78*1R ****
*70*781 *71*YTG *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*782 *71*YTG *72*1R *73*1R *74*1I *75*1R *76*1R ****
*70*783 *71*ZTG *72*14 R *74*4I ****
*70*784 *71*AVG *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*785 *71*CVG *72*1I *73*1R ****
*70*786 *71*DVG *72*10 I *73*4R *74*2R *77*5I ****
*70*787 *71*UGVG *74*8R *75*8R ****
*70*788 *71*SVG *74*1R *75*1R *76*1R *77*1R ****
*70*789 *71*UVG *72*19 I, 1I *74*1I *75*1R *76*1R ****
*70*790 *71*XVVG *74*8B ****
*70*791 *71*XVG *74*1R *77*1R ****
*70*792 *71*DWG *74*2I *75*2R *76*7R ****
*70*793 *71*CWG *72*12 I *73*6B *74*3I ****
*70*794 *71*WWG *72*19 I, 1I *73*1R *74*7I, 1I *75*1R *76*13 R, 1R *77*14 I *78*
12 R ****
*70*795 *71*XWG *72*1I *73*1R *74*1I *76*1R *77*1I ****
*70*796 *71*AXG *72*1 IR, 2I R *73*1R *74*1I *75*1I *76*1R *77*1I *78*1R ****
*70*797 *71*OAXG *74*9I *75*9R *76*19 R ****
*70*798 *71*YAXG *74*8B ****
*70*799 *71*BXG *72*1R *77*1I *78*1R ****
*70*800 *71*CXG *72*2R *73*1R *76*1R *77*1I *78*1R ****
*70*801 *71*DXG *72*1C R *73*4R *74*2R *76*7R *77*5I ****
*70*802 *71*FXG *72*1I *73*1R *75*1R *76*1R *77*1I ****
*70*803 *71*XGXG *74*8I *75*8B *76*14 R ****
*70*804 *71*HXG *72*1I *73*1R *74*1I *76*1R *77*1I *78*1R ****
*70*805 *71*JXG *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*806 *71*MXG *72*1 IR, 2IR *73*1R *77*1I *78*1R ****
*70*807 *71*SXG *72*1 IR, 2 IR *73*1R *7[illegible]1I *75*1R *76*1R *77*1R *78*1R ****
*70*808 *71*YTXG *74*8R ****
*70*809 *71*UXG *72*1 IR *73*1R *74*1R *75*1R *76*1R *77*1 IR ****
*70*810 *71*AVXG *74*8R *76*14 R ****
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*70* 811 *71*OVXG *74*9R *75*9R ****
*70*812 *71*WXG *72*1I *74*1I *77*1B ****
*70*813 *71*XXG *72*19 R, 1R *73*13 R *74*1I *75*1R ****
*70*814 *71*YXG *72*1B, 2B *73*1R *74*1I *76*1R *77*1R *78*1R ****
*70*815 *71*ZXG *72*14 I *73*7R *74*4R *75*4R *77*9I ****
*70*816 *71*AYG *72*1I *73*1B *74*1I *75*1R *76*1R *77*1I ****
*70*817 *71*OAYG *74*9I *75*9R *76*19 R ****
*70*818 *71*CYG *72*1 IB *73*1B *74*1I *76*1R *77*1I *78*1B ****
*70*819 *71*DYG *72*10 B *77*5B ****
*70*820 *71*JYG *72*1 R     *73*1R *74*1B *76*1B *77*1I *78*1R ****
*70*821 *71*JYG *72*1I *73*1B ****
*70*822 *71*LYG *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1B ****
*70*823 *71*MYG *73*1B ****
*70*824 *71*LNYG *74*8I *75*8R *76*14 R ****
*70*825 *71*SYG *72*1I *73*1B *76*1B *77*1I ****
*70*826 *71*WYG *72*1 IR *73*1R *74*1I *75*1R *76*1R ****
*70*827 *71*XYG *72*1I *73*1B *74*1R *76*1R *77*1R ****
*70*828 *71*YYG *72*1B, 19 B ****
*70*829 *71*DZG *72*1C R *74*2I ****
*70*830 *71*JZG *72*1I *73*1B *74*1R *75*1R *76*1R ****
*70*831 *71*LZG *72*1I *73*1R *74*1I *75*1R *78*1R ****
*70*832 *71*MZG *72*1I *73*1B *74*1I *75*1B *76*1R *77*1I *78*1R ****
*70*833 *71*OZG *74*3I *75*3R *76*8R ****
*70*834 *71*SZG *72*1I *73*1R ****
*70*835 *71*XZG *72*1I *74*1R ****
*70*836 *71*ZZG *72*20 R *73*13 R *74*1I *77*14 I ****
*70*848 *71*H*H *74*1I ****
*70*849 *71**H*H *74*8I           8R ****
*70*850 *71*GAH *72*1I *73*1B *74*1I *75*1R ****
*70*851 *71*LAH *72*1 IR *73*1R *74*1I *77*1I *78*1R ****
*70*852 *71*BAH *72*1B *73*1B *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*853 *71*XAH *74*1R *75*1R *77*1R ****
*70*854 *71*CBH *73*6B *74*3I *75*3R *76*6R ****
*70*855 *71*XDH *72*1R *73*1R *74*1I *75*1R *76*6R ****
*70*856 *71*AEH *72*23 B *77*10 I, 1I *78*9R, 2R ****
*70*857 *71*DEH *72*10I *73*4R ****
*70*858 *71*GEH *72*15 I *73*10 R *77*11 I *78*9 R ****
*70*859 *71*LEH *77*11 I *78*9 R ****
*70*860 *71*OEH *77*12 R ****
*70*861 *71*ÇEH *72*15 B *77*11 I *78*9B ****
*70*862 *71*SEH *72*15 R ****
*70*863 *71*YEH *72*15 I B ****
*70*864 *71*YEH *72*15 R *77*11 I *78*9 R ****
*70*865 *71*GGH *72*35 I *77*11 R ****
*70*866 *71*GHGH *74*8R ****
*70*867 *71*LGH *75*1B *78*1B ****
*70*868 *71*OGH *72*12 I *73*6R *74*3R *77*8I *78*7R ****
*70*869 *71*XGH *72*1B ****
*70*870 *71*XHH *74*1R *75*1R ****
*70*871 *71*AIH *74*6I *75*6R *76*6R ****
*70*872 *71*CIH *72*17 B ****
*70*873 *71*GIH *74*1I *75*1R ****
*70*874 *71*HIH *74*6I *75*6B ****
*70*875 *71*LIH *74*6R *76*6R, 1R ****
*70*876 *71*ÇKH *72*1I *74*1I *75*1B ****
*70*877 *71*QQKH *74*8I *75*8R ****
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*70*878 *71**LH *72*1I *74*1I *75*1R *77*1I *78*1R ****
*70*879 *71*SXBLH *74*8I *75*8R ****
*70*880 *71*DLH *72*1CI ****
*70*881 *71*LHLH *74*8I *75*8R *76*18 R ****
*70*882 *71*LLH *74*1I *7K*1R *77*1I *78*1R ****
*70*883 *71*BLH *73*1R ****
*70*884 *71*OTLH *74*9I ****
*70*885 *71**NH *72*2R *73*1R *74*1I *75*1R *76*6R *78*5R ****
*70*886 *71*DNH *73*4R ****
*70*887 *71*MHNH *74*8I *75*8R *76*18 R ****
*70*888 *71*MNH *72*1I *74*1R *75*1R ****
*70*889 *71*ONH *72*12 I *73*6R *74*3I *76*8R *77*8I *78*7R ****
*70*890 *71*BNH *73*1R *75*1R *76*6R *77*1R *78*1R ****
*70*891 *71*XNH *72*1I *77*1I *78*1R ****
*70*892 *71*XAPH *74*8R *75*8R ****
*70*893 *71*OPH *72*19 R, 12 R *74*3R *75*3R ****
*70*894 *71*SPH *72*1R *74*1I *75*1R *76*6R ****
*70*895 *71*QHQH *74*8R ****
*70*896 *71*DBH *72*1C R *77*5I *78*5R ****
*70*897 *71*MBH *72*1I *73*1R *74*1R *77*1I *78*1R ****
*70*898 *71*ORH *72*12I *73*6R *74*3I *75*3R *77*8I *78*7R ****
*70*899 *71*FTH *72*1R ****
*70*900 *71*GTH *72*1I *73*1R *74*1 IR *75*1R *77*1I *78*1R ****
*70*901 *71*SHTH *74*8R *75*8R *76*18 R ****
*70*902 *71*LTH *72*1I *73*1R *74*1R *75*1R *76*6R *77*1I ****
*70*903 *71*ÇTH *72*1R *74*1R *77*1I *78*1R ****
*70*904 *71*ÇÇTH *74*8R *75*8R ****
*70*905 *71*STH *72*1R *74*7R ****
*70*906 *71*YTH *72*1R *73*1R *74*1I *75*1R *76*6R ****
*70*907 *71*WHWH *74*8R ****
*70*908 *71*ÇWH *74*1I *75*1R ****
*70*909 *71*CXH *72*1R *73*1R *74*1I *75*1R *77*1I *78*1R ****
*70*910 *71*DXH *72*10 I ****
*70*911 *71*FXH *73*1R *74*1I *75*1R ****
*70*912 *71*OFXH *75*9R *76*19 R ****
*70*913 *71*GXH *72*1R *73*1R *75*1R *77*1I *78*1R ****
*70*914 *71*OHXH *74*9R ****
*70*915 *71*XHXH *74*8R ****
*70*916 *71*MXH *72*1I *74*1I *77*1I *78*1R ****
*70*917 *71*SXH *72*1I *73*1R *74*1I *75*1R *76*6R *77*1I *78*1R ****
*70*918 *71*CTXH *74*8I *75*8R ****
*70*919 *71*ÇTXH *74*8R ****
*70*920 *71*YTXH *74*8R ****
*70*921 *71*WXH *72*1I *74*1I *77*1R ****
*70*922 *71*YXH *77*1R ****
*70*923 *71*YTYH *74*8I *75*8R *76*18 R ****
*70*924 *71*YYH *72*19 R ****
*70*930 *71*A+I *72*2IR ****
*70*931 *71*D+I *72*25 R *76*7R ****
*70*932 *71*L+I *73*2R *77*2R ****
*70*933 *71*Y+I *72*1R *73*2R *74*1I *75*1R *76*1R ****
*70*934 *71*AAI *74*1R *76*1R ****
*70*935 *71*LAI *74*1I *75*1R *76*1R *77*2R *78*1R ****
*70*936 *71*MAI *74*1I *75*1I *76*1R ****
*70*937 *71*XAI *77*2I ****
*70*938 *71*YAI *72*2R,29R *74*1I *75*1R *76*1R *77*2I *78*2R ****
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*70*939 *71*CBI *77*1R ****
*70*940 *71*DBI *73*16R*74*2R *77*6I ****
*70*941 *71*CBI *75*3R *76*8R ****
*70*942 *71*RBI *72*2R *74*1I *75*1R *76*1R *77*2I ****
*70*943 *71*XBI *72*23 I ****
*70*944 *71*CCI *72*19 I *74*1I *75*1R *76*1R ****
*70*945 *71*DCI *72*1C I *74*2I *76*2R *77*6R ****
*70*946 *71*LLCI *74*8R *75*8R ****
*70*947 *71*RCI *72*5I *73*2R *74*1I *75*1R *76*2R *77*2I *78*2R ****
*70*948 *71*ADI *72*5I *76*1R ****
*70*949 *71*CDI *74*1I *75*1R *76*1R ****
*70*950 *71*XDI *72*3R  *76*1R ****
*70*951 *71*ONEI *74*3R *75*5R ****
*70*952 *71*OEI *74*3I, 3R *76*8R ****
*70*953 *71*LFI *72*5R *77*2R ****
*70*954 *71*MFI *72*1I *74*1R *75*1R ****
*70*955 *71*OFI *75*3R ****
*70*956 *71*RFI *75*1R *77*3I ****
*70*957 *71*CGI *72*5R *74*1I *75*1R *76*1R *78*2R ****
*70*958 *71*LGI *73*2R *74*1R *75*1R *77*2R ****
*70*959 *71*MGI *72*5R *74*1R *75*1R *76*1R ****
*70*960 *71*QGI *74*1I *75*1R *76*1R *78*2R ****
*70*961 *71*SGI *74*1I *76*1R ****
*70*962 *71*YGI *74*1I *75*1R *76*1R *78*2R ****
*70*963 *71*AHI *72*23 R *77*1I *78*2R ****
*70*964 *71*GKI *73*2R *76*2R *77*2I *78*2R ****
*70*965 *71*LKI *72*24 R ****
*70*966 *71*ZKI *74*4R ****
*70*967 *71*CLI *72*5I *73*2R *74*1I *75*1R *76*1R *77*2I *78*2R ****
*70*968*71*JLI*72*26 R****
*70*969 *71*LLI *74*1R *76*1R *77*1R *78*2R ****
*70*970 *71*BLI *72*5R ****
*70*971 *71*LNI *71*3R *75*3R *76*8R *77*1R ****
*70*972 *71*XNI *76*1R *77*1I ****
*70*973 *71*DPI *72*1C I *77*6I ****
*70*974 *71*CPI *74*7R ****
*70*975 *71*WPI *72*1I *74*1R *75*1R *77*1I ****
*70*976 *71*CQI *72*1I *73*2R *74*1I *75*1R *76*1R *78*2R ****
*70*977 *71*JQI *72*1I ****
*70*978 *71*SQI *72*23 I *73*2R *76*2R *77*2I *78*2R ****
*70*979 *71*XQI *72*1I *73*2R *74*1I *75*1R *76*1R *77*1I ****
*70*980 *71*CRI *72*1I *73*2R *74*1I *75*1R *76*1R, 2R *77*2I *78*2R ****
*70*981 *71*DRI *72*10 I *78*5R ****
*70*982 *71*FRI *73*2R ****
*70*983 *71*HRI *72*1I ****
*70*984 *71*LRI *74*1R *75*1R *76*1R *77*2I ****
*70*985 *71*SRI *72*1R *78*2R ****
*70*986 *71*URI *72*1I *73*2R *74*1I *76*1R ****
*70*987 *71*XRI *72*1R *74*1I *75*1R ****
*70*988 *71*DTI *72*1C R *74*2I *75*2R *76*7R *77*6R ****
*70*989 *71*GTI *76*1R ****
*70*990 *71*DTITI *74*8R ****
*70*991 *71*JTI *72*1R ****
*70*992 *71*BTI *77*2R *78*2R ****
*70*993*71**VI*72*5 R*74*1 R*75*1 R*77*2 I*78*2 R****
*70*994 *71*AVI *73*19 R *74*1I *75*1R *76*1R *77*3I *78*3R ****
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*70*995 *71*BVI *74*1I *75*1R *76*1R *77*3I *78*3R ****
*70*996 *71*RVI *74*1R *75*1R *77*3I *78*3R ****
*70*997 *71*SVI *74*1R ****
*70*998 *71*WVI *72*6I, 5I *73*2R *77*2I, 3I *78*2R, 3R ****
*70*999 *71*XVI *72*1I, 7I *73*2R *74*1I *75*1R *76*1R *78*2R, 3R ****
*70*1000 *71*ZVI *72*6R, 27 R *73*20 R *77*17 I *78*13 R ****
*70*1001 *71*AWI *72*1 IR ****
*70*1002*71*CWI*72*1 R, 35 R*73*2 R*74*1 R*76*1 R*78*2 R****
*70*1003 *71*RWI *72*5R *77*2I *78*2R ****
*70*1004 *71*SWI *74*1R ****
*70*1005 *71*UWI *72*41 R ****
*70*1006*71*XWI*72*2 R, 35 R*74*1 R*75*1 R*76*1 R*77*2 I*78*2 R****
*70*1007 *71*YWI *72*23 I *73*2R ****
*70*1008 *71*[illegible]XI *72*1R *73*1R *74*1 IR *76*1R ****
*70*1009 *71*CXI *72*5R *77*2I *78*2R ****
*70*1010*71*DXI*72*10 I*73*16 R*77*6 I****
*70*1011 *71*HXI *72*35 R *74*1R *75*1R ****
*70*1012 *71*BXI *72*2R ****
*70*1013 *71*WXI *72*1 IR *73*2R *74*1I *75*1R *76*1R *77*1R ****
*70*1014 *71*YXI *72*25 I *73*2R *74*1R *77*2I ****
*70*1015 *71*AYI *72*5R *73*2R *74*1I *75*1R *76*1R *77*2I *78*2R ****
*70*1016 *71*HYI *77*2I *78*2R ****
*70*1017 *71*MYI *72*35 R *77*3R ****
*70*1018 *71*OYI*72*13 R*73*6R *74*3I *75*3R *76*8R ****
*70*1019 *71*BYI *73*2R *77*2I ****
*70*1020 *71*XYI *72*1R *74*1I *75*1R *76*1R *77*1 IR ****
*70*1021 *71*YYI *72*1R *74*1R *75*1R *76*1R ****
*70*1022 *71*CZI *74*1I *75*1R *76*1R ****
*70*1023 *71*MZI *72*1R *74*1I *75*1R *76*1R ****
*70*1024 *71*XZI *73*2R *74*1R *75*1R *76*1R, 2R *77*2I ****
*70*1030 *71*A+K *72*1R *73*1R *76*1R *77*1I *78*1R ****
*70*1031 *71*D+K *73*4R *77*5I ****
*70*1032 *71*S+K *77*1R ****
*70*1033 *71*X+K *73*1R *74*1I *75*1R *76*1R *77*1 IR *78*1R ****
*70*1034 *71*AAK *74*1I *75*1R ****
*70*1035 *71*CAK *72*2R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1036 *71*DAK *72*1CR *73*4R *74*2R *75*2R *76*7R ****
*70*1037 *71*LAK *72*1I *73*1R *74*1I *75*1R ****
*70*1038 *71*OAK *72*12 R *74*3I ****
*70*1039 *71*CAK *72*1I *74*1I *75*1R *76*1R *78*1R ****
*70*1040 *71*XAK *72*1I *73*1R *77*1I *78*1R ****
*70*1041 *71*YAK *72*1I *73*1R *74*1I *75*1R *76*1R *77*1R ****
*70*1042 *71*CCK *72*1R *74*1R ****
*70*1043 *71*MCK *72*1R ****
*70*1044 *71*OCK *72*12 I *74*3I *75*3R ****
*70*1045 *71*XCK *72*1R *74*1I *75*1R *76*1R ****
*70*1046 *71*DDK *72*10R *74*2R *76*7R *77*5I *78*5R ****
*70*1047 *71*ODK *74*3R *75*1R ****
*70*1048 *71*DEK *72*10I *73*4R *74*2I *77*5R ****
*70*1049 *71*GZK *72*15 R ****
*70*1050 *71*LEK *72*15 I *77*11 I ****
*70*1051 *71*OZK *72*16 R *73*9R *74*5I *75*5R *76*11 R *77*12 I *78*10 R ****
*70*1052 *71*CEK *74*3I *75*3R *76*8R *77*8I *78*2R ****
*70*1053 *71*OPEK *74*9I *75*9R *76*19 R ****
*70*1054 *71*QEK *72*15 R ****
*70*1055 *71*SEK *74*1R ****
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*70*1056 *71*UEK *72*2R *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1057 *71*XEK *74*1B, 6I *75*6R ****
*70*1058 *71*AFK *72*1I *73*1R *74*1I *75*1R *77*1I *78*1R ****
*70*1059 *71*FFK *72*19 B ****
*70*1060 *71*CGK *73*1R *74*1I *77*1I *78*1R ****
*70*1061 *71*DGK *72*1C R ****
*70*1062 *71*GKGK *74*8B *76*14 R ****
*70*1063 *71*LGK *72*1I *74*1I *75*1R *76*1R *77*1R ****
*70*1064 *71*YGK *72*1B *73*1B *74*1R *76*1R *77*1R *78*1R ****
*70*1065 *71*CIK *74*6R *75*6R ****
*70*1066 *71*LIK *72*15 I *77*1I ****
*70*1067 *71*LIK *74*6I *75*6R ****
*70*1068 *71*SIK *72*17 B ****
*70*1069 *71*XIK *74*6I *75*6R ****
*70*1070 *71*AKK *75*1B *77*1B *78*1R ****
*70*1071 *71**LK *72*1R *73*1R *74*1I *77*1I *78*1R ****
*70*1072 *71*ALK *74*1I *76*1B *77*1I *78*1R ****
*70*1073 *71*DLK *72*10 R *74*2R *75*2R *76*7R ****
*70*1074 *71*GLK *73*1R *75*1R *76*1R ****
*70*1075 *71*IKLK *74*8I *75*8B *74*14 R ****
*70*1076 *71*LLK *72*1I *73*1R *74*1I *76*1R *77*1I *78*1R ****
*70*1077 *71*MLK *73*1B *77*1I *78*1R ****
*70*1078 *71*DNK *74*2R *75*2R *76*1R ****
*70*1079 *71*DNK *72*2B ****
*70*1080 *71*ONK *72*12 R *73*6R *74*3I *76*8R *77*8I ****
*70*1081 *71*CNK *72*1I *73*1B *77*1R ****
*70*1982 *71*XNK *72*1I *73*1R *74*1I *76*1R *77*1R ****
*70*1083 *71*YNK *72*1R *73*1R *74*1I *76*1R *77*1I ****
*70*1084 *71*DPK *73*4B *74*2I *75*2B *76*7R ****
*70*1085 *71*MPK *74*1R *75*1R *76*1R ****
*70*1086 *71*CPK *74*3I *75*3B ****
*70*1087 *71*QPK *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1088 *71*BPK *73*1B *76*1B *77*1I *78*1R ****
*70*1089 *71*SPK *72*1I *73*1R *75*1R *76*1R *77*1I *78*1R ****
*70*1090*71*DQK*72*10 I*73*4 B*74*2 I*75*2 R*76*7 R****
*70*1091 *71*GQK *72*1I *73*1R *74*1I ****
*70*1092 *71*QKQK *74*8I *75*8B ****
*70*1093 *71*LQK *72*1B *73*1B ****
*70*1094 *71*MQK *72*1I ****
*70*1095 *71*CQK *72*12 B ****
*70*1096 *71*QQK *72*19 IR, 1I *73*1R *76*13 B ****
*70*1097 *71*SQK *72*1I B *73*1B *74*1R *75*1B *76*1R *77*1 IR *78*1R ****
*70*1098 *71*RKRK *74*8R *76*14 R ****
*70*1099 *71*CRK *72*1B *74*1I *76*1R *77*1I *78*1R ****
*70*1100 *71*XRK *73*1R *74*1I *75*1R *76*1R *77*1 IR *78*1R ****
*70*1101 *71**TK *72*1B ****
*70*1102 *71*DTK *72*10 I *73*4R *74*2R *75*2R *76*7R ****
*70*1103 *71*LTK *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1104 *71*CTK *72*12 IR *77*8R *78*7B ****
*70*1105 *71*STK *72*19 I, 1R *73*1R, 11R *74*7R *76*13 B *77*1R ****
*70*1106 *71*XTK *72*1I *74*1I *75*1R *76*6R *77*1R ****
*70*1107 *71*YTK *72*1I *73*1R *76*1R *77*1I *78*1R ****
*70*1108 *71*ZTK *72*14 I *73*7B *74*4I *75*4R *77*9B ****
*70*1109 *71*XZTK *74*8I *75*8R *76*14 B ****
*70*1110 *71*AXK *72*1I ****
*70*1111 *71*LAXK *74*8I *75*8R *76*14 B ****
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*70*1112 *71*DXK *72*1C I *73*4R *77*5R ****
*70*1113 *71*FXK *72*1I *73*1R *77*1I *78*1R ****
*70*1114 *71*GXK *77*1I *78*1R ****
*70*1115 *71*JXK *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1116 *71*AKXK *74*8I *75*8R ****
*70*1117 *71*MKXK *74*8I *75*8R *76*14                ****
*70*1118 *71*CKXK *74*8R *75*8R ****
*70*1119 *71*XKXK *74*8I ****
*70*1120 *71*YKXK *74*8R ****
*70*1121 *71*MXK *72*1I *73*1R *77*1R ****
*70*1122 *71*MQXK *74*8I *75*8R ****
*70*1123 *71*RXK *72*1R *77*1I *78*1R ****
*70*1124 *71*ZXK *72*14 I *73*7R *74*4I *75*4R *77*9I *78*8R ****
*70*1125 *71*DYK *72*1CR ****
*70*1126 *71*YKYK *74*8I *76*14 R ****
*70*1127 *71*LYK *72*1R *73*1R *74*1R *76*1R *77*1I *78*1R ****
*70*1128 *71*SYK *74*1I *75*1R *76*1R ****
*70*1129 *71*XYK *72*2R *73*1R *74*1R *75*1R *76*1R *77*1I *78*1R ****
*70*1130 *71*AZK *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1131 *71*MZK *73*1R *74*1R *75*1R *76*1R *77*1I *78*1R ****
*70*1132 *71*SZK *74*1I *76*1R *77*1R *78*1R ****
*70*1133 *71*XZK *73*1R *74*1I *75*1R *77*1I *78*1R ****
*70*1134 *71*YZK *72*1I *73*1R *74*1R *75*1R *76*1R *77*1R ****
*70*1135 *71*ZZK *72*19I, 20 I *73*7R *74*4R *75*4R *76*9R *77*1R       ****
*70*1143 *71*D+L *72*1C R *73*4R *77*5I ****
*70*1144 *71*H+L *72*4R *77*1R *78*1R ****
*70*1145 *71*M+L *76*1R *77*1I *78*1R ****
*70*1146 *71*AAL *73*1R *74*1I *75*1R *76*1R ****
*70*1147 *71*CAL *72*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1148 *71*DAL *74*2I *75*2R *76*7R ****
*70*1149 *71*FAL *74*1R *75*1R ****
*70*1150 *71*HAL *72*1R *73*1R *74*1I *75*1R *76*1R ****
*70*1151 *71*ALAL *74*8I *75*8R *76*14 R ****
*70*1152 *71*XLAL *74*8R ****
*70*1153 *71*CAL *72*12 I *73*6R *74*3I *75*3R *76*8R *77*8I *78*7R ****
*70*1154 *71*QAL *72*1R ****
*70*1155 *71*YAL *72*1I *73*1R *74*1R *75*1R *76*1R *77*1I *78*1R ****
*70*1156 *71*FBL *72*1I *73*1R ****
*70*1157 *71*BLBL *74*8R *75*8R *76*14 R ****
*70*1158 *71*ADL *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1159 *71*BDL *72*1I *73*1R *74*1I ****
*70*1160 *71*DDL *72*10 R ****
*70*1161 *71*HDL *72*1R *73*1R *74*1I *75*1R *76*1R ****
*70*1220 *71*HHDL *74*8R ****
*70*1162 *71*DLDL *76*14 R ****
*70*1163 *71*MDL *76*1R *77*1R ****
*70*1164 *71*WDL *72*1I *74*1I *75*1R *76*1R ****
*70*1165 *71*DEL *72*1CI *73*4R *74*2I *75*2R *76*7R *77*5I *78*5R ****
*70*1166 *71*FEL *72*15 R *73*8R *77*11 I *78*9R ****
*70*1167 *71*GEL *74*1I *75*1R ****
*70*1168 *71*HEL *72*15 I *77*10 I, 11 I *78*9R ****
*70*1169 *71*OEL *72*16 R *73*9R *74*10R*75*5R *76*11R *77*11I R ****
*70*1170 *71*REL *72*15 R ****
*70*1171 *71*UEL *72*15 R *74*5R *75*5R *76* 1CR *77*9I, 1C I ****
*70*1172 *71*YEL *72*15 I *73*8R, 1C R *78*9R ****
*70*1173 *71*FAFL *74*8R *75*8R ****
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*70*1174 *71*JGL *72*1I *73*1R *74*1I *75*1R *77*1I ****
*70*1175 *71*GLGL *74*8I *75*8R *76*14 R ****
*70*1176 *71*MGL *72*1 IR *73*1R *74*1R *76*1R *77*1I *78*1R ****
*70*1177 *71*OGI *72*12 R *74*3I *77*8I *78*7R ****
*70*1178 *71*UGL *72*1I *73*1R *75*1R *77*1I *78*1R ****
*70*1179 *71*YGL *72*1R *73*1R *74*1I *76*1R ****
*70*1180 *71*YYGL *74*8I ****
*70*1181 *71*ZGL *77*9 IR ****
*70*1182 *71*DHI *72*10 R ****
*70*1183 *71*SHL *72*1R *73*1R *74*1I *75*1R ****
*70*1184 *71*YHL *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*1185 *71*OIL *72*18 R                                                   ****
*70*1186 *71*UIL *72*15 R *74*5R *75*5R *76*1C R *77*9I, 10 I ****
*70*1187 *71*CKL *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*1188 *71*DKI *74*2I *75*2R ****
*70*1189 *71*JKI *72*1R ****
*70*1190 *71*JLKL *74*8I *75*8R *76*14 R ****
*70*1191 *71*OQKL *74*9I *75*9R *76*19 R ****
*70*1192 *71*CNL *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*1193 *71*MLNL *74*8I ****
*70*1194 *71*OPL *73*15 R *76*11 R *77*16 R ****
*70*1195 *71*HQL *74*1I ****
*70*1196 *71*MYQL *74*8I *75*8R ****
*70*1197 *71*QLQL *74*8R *75*8R ****
*70*1198 *71*ARL *76*1R *77*1I *78*1R ****
*70*1199 *71*BRL *72*1R *73*1R *74*1I *76*1R *77*1I *78*1R ****
*70*1200 *71*DRL *72*1C R                         ****
*70*1201 *71*FRL *72*1R *73*1R *76*1R *77*1I ****
*70*1202 *71*HRL *72*1I *77*1I *78*1R ****
*70*1203 *71*RLRL *74*8I *76*14 R ****
*70*1204 *71*ORL *77*8R ****
*70*1205 *71*QRL *72*1I *73*1R ****
*70*1206 *71*BRL *72*19 R ****
*70*1207 *71*CTL *72*1R *74*1R *76*1R ****
*70*1208 *71*SLTL *74*8I *75*8R ****
*70*1209 *71*STL *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*1210 *71*ZTL *72*14 I *73*7R *74*4I *75*4R ****
*70*1211 *71*DWL *72*1C I *77*5I *78*5R ****
*70*1212 *71*GWL *72*9I *73*1R,15R *75*1R *76*1R *77*1I *78*1R ****
*70*1213 *71*HWL *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1214 *71*WLWL *74*8I *75*8R *76*14 R ****
*70*1215 *71*WWL *72*19 I, 1R *73*1R *74*1I *75*1R *76*1R *77*14 R ****
*70*1216 *71*YWL *73*1R *74*1I *77*1I *78*1R ****
*70*1217 *71*CYL *74*1I *75*1R *76*1R ****
*70*1218 *71*OYL *74*3R *77*8I ****
*70*1219 *71*ZZL *72*14 I *73*7R *74*4I ****
*70*1221 *71*C+N *77*1I ****
*70*1222 *71*D+N *77*5I ****
*70*1223 *71*J+N *72*1R *77*1R ****
*70*1224 *71*O+N *74*3R ****
*70*1225 *71*Q+N *72*1I *73*1R *74*1R *76*1R *77*1I *78*1R ****
*70*1226 *71*X+N*73*1R *77*1R ****
*70*1227 *71*BBN *72*1I *74*7I *76*13 R ****
*70*1228 *71*CBN *74*1I *75*1R *77*1I *78*1R ****
*70*1229 *71*LBN *74*1I *75*1R *76*1R ****
*70*1230 *71*BNBN *74*8I *76*14 R ****
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*70*1231 *71*OBN *74*3I *75*3R *76*8R ****
*70*1232 *71*HPBN *74*8I *75*8B *76*14 B ****
*70*1233 *71*SBN *75*1R ****
*70*1234 *71*XBN *74*1I *75*1B *76*1B ****
*70*1235 *71*YXBN *74*8R *75*8R ****
*70*1236 *71*CCN *72*19 I, 1I *73*11 B, 1B *74*7I, 1I *75*1R *76*13 B *78*1R ***
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*70*1237 *71*JCN *73*1B ****
*70*1238 *71*LCN *73*1R ****
*70*1239 *71*CCN *74*3B *75*3B ****
*70*1240 *71*XCN *77*1I *78*1R ****
*70*1241 *71*+DN *74*1B ****
*70*1242 *71*DDN *73*1R ****
*70*1243 *71*LDN *72*1I *73*1B ****
*70*1244 *71*DNDN *74*8I *76*14 R ****
*70*1245 *71*XDN *72*1I *73*1B *74*1 IR *76*1R *77*1I ****
*70*1246 *71*BEN *72*15 IR *73*8R *74*5I *76*10 B ****
*70*1247 *71*GEN *73*1C B ****
*70*1248 *71*HEN *72*15 B *73*8R *74*5I *76*1C R *77*1C I, 11 I *78*9R ****
*70*1249 *71*JEN *72*15 R *73*8R *77*10 I, 11 I *78*9R ****
*70*1250 *71*LEN *72*15 I *73*10 B *77*11 I *78*9 R ****
*70*1251 *71*MEN *78*9R ****
*70*1252 *71*UEN *72*15 B ****
*70*1253 *71*WEN *77*11 R ****
*70*1254 *71*XEN *73*11 B *77*10 I, 11 I *78*9R ****
*70*1255 *71*YEN *72*15 I *73*8R *77*10 IB, 11 IR ****
*70*1256 *71*ZEN *72*22 B *74*12I*77*13 I *78*11 R ****
*70*1257 *71*BFN *72*1 I *73*1 B *74*1I *75*1R *76*1R *78*1R ****
*70*1258 *71*GFN *72*1R *73*1R *77*1R ****
*70*1259 *71*LFN *75*1B *76*1B ****
*70*1260 *71*FNFN *74*8I *76*14 R ****
*70*1261 *71*XFN *72*1B *74*1B *75*1R *78*1R ****
*70*1262 *71*GXFN *76*14 R ****
*70*1263 *71*+GN *72*1I *74*1I ****
*70*1264 *71*DGN *72*1C IR *73*4R *74*2IR *75*2R *76*7B *77*5I *78*5I ****
*70*1265 *71*FGN *77*1I *78*1B ****
*70*1266 *71*HGN *72*1I *73*1R ****
*70*1267 *71*LGN *72*1I *73*1R *77*1R *78*1R ****
*70*1268 *71*UGN *72*1I *73*1B *77*1R ****
*70*1269 *71*WGN *72*1I *73*1R *74*1I *76*1R
*70*1270 *71*YGN *72*1B *76*1B *77*1I ****
*70*1271 *71*DHN *76*7R *77*5R ****
*70*1272 *71*HHN *77*1B *78*1B ****
*70*1273 *71*HNHN *74*8I *75*8R *76*14 R ****
*70*1274 *71*XHN *73*1B *77*1I *78*1R ****
*70*1275 *71*GIN *74*1R *75*1R ****
*70*1276 *71*MIN *74*6I *76*12 B ****
*70*1277 *71*ONIN *74*9R *75*9R ****
*70*1278 *71*CIN *74*3I *75*3B *76*8R ****
*70*1279 *71*UIN *72*17 R *74*6R *77*11 R ****
*70*1280 *71*WIN *72*17 B ****
*70*1281 *71*DKN *74*2R *76*7R ****
*70*1282 *71*JKN *72*19 R *73*11 R, 1R *77*15 I *78*12 R ****
*70*1283 *71*JNKN *74*8I *75*8R *76*14 R ****
*70*1284 *71*OKN *74*3I *75*3R *76*8R ****
*70*1285 *71*CKN *72*1I ****
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*70*1286 *71*XKN *72*1I *73*1R *76*1R ****
*70*1287 *71**LN *72*2 IB *73*7R *74*1I *75*1R *76*1R ****
*70*1288 *71*BLN *72*1I *73*1R ****
*70*1289 *71*GLN *72*1I *73*1B *74*1R *75*1B *77*1I *7,*1B ****
*70*1290 *71*HLN *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1291 *71*HNLN *74*8R ****
*70*1292 *71*JLN *72*1B *73*1B *75*1R *76*1R *77*1I *78*1R ****
*70*1293 *71*LLN *72*19I, 1R *73*1R, 11B *74*7I, 1I *75*7R,1R *76*13R, 1R****
*70*1294 *71*LNLN *74*8I *75*8B *76*14 B ****
*70*1295 *71*ULN *73*1R *74*1I *77*1I *78*1R ****
*70*1296 *71*WLN *72*1I *73*1B *77*1I ****
*70*1297 *71*XFNN *74*8R *76*14 R ****
*70*1298 *71*CNN *74*3I *75*3B *76*8R ****
*70*1299 *71*YNN *74*1I *75*1R *76*1R ****
*70*1300 *71*DPN *72*10 I *73*4R *74*2I *75*2B *76*7R *77*5I *78*5R ****
*70*1301 *71*GPN *74*1I *75*1R *77*1R ****
*70*1302 *71*BPN *72*1I *73*1B *74*1I *75*1R *77*1I ****
*70*1303 *71*XPN *74*1R ****
*70*1304 *71*DQN *72*10 B *73*4B *74*2R *76*7R *77*5I ****
*70*1305 *71*JQN *72*1I *73*1R *74*1R *75*1B *78*1R ****
*70*1306 *71*OKQN *74*9B *76*19 B ****
*70*1307 *71*CNCN *74*8I *75*8B *76*14 B ****
*70*1308 *71*XNQN *74*8R *75*8R ****
*70*1309 *71*CQN *73*11 B *74*7I, 1I *76*13 R *77*15 I *78*12 R ****
*70*1310 *71*XTQN *74*8I *75*8R ****
*70*1311 *71*WQN *72*1I *73*1B ****
*70*1312 *71*XQN *72*1I *73*1R *76*1R ****
*70*1313 *71*CRN *72*1B *73*1B *76*1R *77*1I *78*1R ****
*70*1314 *71*HRN *72*1R *73*1R *74*1 IR *75*1B *76*1R *77*1 IB *78*1R ****
*70*1315 *71*JRN *72*1I *73*1B *74*1I *75*1B *76*1R ****
*70*1316 *71*LRN *72*1R ****
*70*1317 *71*CRN *74*3B *76*8B ****
*70*1318 *71*AXRN *76*14 R ****
*70*1319 *71**VN *72*1I *73*1B *76*1R *77*1I *78*1R ****
*70*1320 *71*DVN *72*1C I *73*4R *74*2I *75*2B *76*7B *77*5I ****
*70*1321 *71*UNVN *74*8I *75*8B *76*14 R ****
*70*1322 *71*BVN *7[illegible]1B *74*1I *75*1R *76*1R *77*1I ****
*70*1323 *71*UVN *72*19 I, 1I *73*1R *74*1I *76*1R ****
*70*1324 *71*WVN *72*1I *73*1B *74*1B *75*1R *76*1R **[illegible]
*70*1325 *71*XVN *72*1I *73*1R *74*1I *75*1R *76*1R ***
*70*1326 *71*GWN *76*1B ****
*70*1327 *71*HWN *74*1R ****
*70*1328 *71*MWN *74*1I *75*1B *76*1R ****
*70*1329 *71*WNWN *74*8I *75*8R *76*14 R ****
*70*1330 *71*SWN *74*1B *75*1B ****
*70*1331 *71*RVWN *76*14 R ****
*70*1332 *71*WWN *73*11 R *76*1R *77*14 I *78*12 R ****
*70*1333 *71*XWN *74*1B ****
*70*1334 *71*YWN *74*1I *75*1R *76*1R ****
*70*13[illegible] *71**XN *77*1I *78*1B ****
*70*1336 *71*BXN *72*1I *73*1R ****
*70*1337 *71*CXN *72*1B *73*1B *74*1R *77*1I *78*1R ****
*70*1338 *71*DXN *72*1C IR *77*5I ****
*70*1339 *71*GXN *72*1I *73*1B *74*1I *75*1R *76*1R ****
*70*1340 *71*HXN *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*1341 *71*HHXN *74*8I *75*8B *76*14 B ****
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*70*1342 *71*JXN *73*1R *75*1R *77*1I *78*1R ****
*70*1343 *71*FKXN *74*8I *75*8R ****
*70*1344 *71*LKXN *74*8R *75*8R *76*14 R ****
*70*1345 *71*XNXN *76*14 R ****
*70*1346 *71*CXN *76*8R ****
*70*1347 *71*QXN *73*1R *74*1I *75*1R *76*1R ****
*70*1348 *71*UXN *73*1R *77*1I *78*1R ****
*70*1349 *71*WXN *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1350 *71*XXN *72*19 R, 1R *74*1I *75*1R *76*1R *77*14 I, 1I *78*12 R,1R ****
*70*1351 *71*+YN *74*1R ****
*70*1352 *71*DYN *72*10 I *73*4R *74*2R *76*7R *77*5I ****
*70*1353 *71*GYN *72*1I *73*1R *77*1I ****
*70*1354 *71*XHYN *74*8I *75*8R ****
*70*1355 *71*JYN *72*1I *73*1R *74*1R *75*1R *76*1R *77*1I *78*1R ****
*70*1356 *71*LKYN *75*8R *76*14 R ****
*70*1357 *71*CKYN *74*8I *75*8R *76*14 R ****
*70*1358 *71*LYN *72*1IR *73*1R *74*1I *76*1R *77*1I ****
*70*1359 *71*BNYN *74*8I *75*8R ****
*70*1360 *71*YNYN *74*8IR *75*8R ****
*70*1361 *71*SWYN *74*8R *75*8R *76*14 R ****
*70*1362 *71*YYN *72*19 I, 1I *74*1I *75*1I *76*1P *77*14 R, 15 R ****
*70*1363 *71*BZN *72*1R *73*1R *74*1I *78*1R ****
*70*1364 *71*GZN *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1365 *71*OZN *72*12 R *74*3I *75*3R *76*8R *77*8R ****
*70*1366 *71*WZN *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1379 *71*D+P *72*1C R *73*4R *74*2I *76*7R *77*5I ****
*70*1380 *71*M+P *72*1I *73*1R ****
*70*1381 *71*S+P *72*1R *74*1R *77*1I ****
*70*1382 *71*U+P *72*1 IR *74*1I *75*1R *76*6R ****
*70*1383 *71*W+P *72*1R ****
*70*1384 *71*X+P *74*1I ****
*70*1385 *71*+AP *73*3R *74*1IR *76*1 R ****
*70*1386 *71*AAP *77*1R ****
*70*1387 *71*DAP *74*2 R ****
*70*1388 *71*GAP *72*1R *74*1R *76*1R ****
*70*1389 *71*HAP *72*1R *73*1R *74*1R *76*1R *77*1I, 4I *78*1R, 4R ****
*70*1390 *71*LAP *72*7R *73*3R *74*1I *76*1R ****
*70*1391 *71*RAP *72*8R *74*1R *77*1I, 4I *78*4R ****
*70*1392 *71*WAP *72*7R ****
*70*1393 *71*XAP *72*1R *73*3R *76*1R ****
*70*1394 *71*ABP *72*7R *73*1R *75*1R *76*1R *77*1R ****
*70*1395 *71*CBP *72*1R *74*1I *75*1R *76*1R *77*4I *78*4R ****
*70*1396 *71*DBP *72*8R *77*4I *78*4R ****
*70*1397 *71*GBP *72*9I *74*1I *75*1R *76*1R *77*4I ****
*70*1398 *71*LBP *72*7R ****
*70*1399 *71*OBP *74*3I *75*3R *76*8R *77*8I *78*7R ****
*70*1400 *71*CBP *72*1I *74*1R *75*1R ****
*70*1401 *71*RBP *72*8R *73*3R *74*1I *75*1R *76*1R *77*4 IR *78*4R ****
*70*1402 *71*SBP *72*7I *73*3R *74*1I *75*1R *76*1R *78*4R ****
*70*1403 *71*XBP *72*1I *73*3R *74*1IR *77*4I *78*4R ****
*70*1404 *71*YBP *72*9R *76*1R *77*4I *78*4R ****
*70*1405 *71*YBP *72*7I *73*3R ****
*70*1406 *71*+CP *72*9R ****
*70*1407 *71*ACP *72*7 IR *73*3R *74*1I *76*1R ****
*70*1408 *71*CCP *72*2C R, 1R *74*7I, 1I *75*7R, 1R *76*13 R, 1R *77*4I, 15 I *7
8*4R****
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*70*1409 *71*DCP *74*2I *75*2R *76*7R ****
*70*1410 *71*GCP *72*7I *73*3B *75*1B *77*4R *78*4B ****
*70*1411 *71*MCP *72*8B *77*4B ****
*70*1412 *71*CPCP *74*8I *75*8R *76*14 B ****
*70*1413 *71*SCP *72*1B, 7B *73*3R *76*1R *77*4I ****
*70*1414 *71*XCP *72*7I,8I *73*3R *77*4R, 1I *78*4R ****
*70*1415 *71*BDP *72*1I *73*1B *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1416 *71*DDP *72*1C R *73*4R ****
*70*1417 *71*LDP *74*1I *75*1B *76*1R ****
*70*1418 *71*NDP *72*1R *74*1R *76*1R *77*1R ****
*70*1419 *71*WDP *72*1B ****
*70*1420 *71*XDP *72*1R *74*1I *76*1R *77*1IR *78*1R ****
*70*1421 *71*+EP *72*15 R *77*1 I, 11 I****
*70*1422 *71*AEP *72*15 B *74*5I *76*10 B *77*11 I ****
*70*1423 *71*CEP *72*15 R *76*1C R *77*11 I *78*9R ****
*70*1424 *71*DEP *72*10 B *73*4B *74*2R *76*7R *77*5I ****
*70*1425 *71*GEP *72*15 R *73*8R, 10 R *77*11 I *78*9B ****
*70*1426 *71*HEP *72*15 B *74*1I *76*1R ****
*70*1427 *71*LEP *74*1I *75*1R *76*1R ****
*70*1428 *71*MEP *72*15 B ****
*70*1429 *71*CEP *73*9B ****
*70*1430 *71*OEP *74*3I *75*3R *76*8R ****
*70*1431 *71*DPEP *74*2B *75*2B *76*7R ****
*70*1432 *71*QEP *72*15 R *77*11 I *78*9R ****
*70*1433 *71*BEP *72*15 B *73*10 R *76*10 R *77*11 I *78*9 R ****
*70*1434 *71*SEP *72*15 I *74*5I *76*10 R *77*10 I, 11 I *78*9B ****
*70*1435 *71*UEP *74*5B *76*10 B *77*11 R ****
*70*1436 *71*WEP *77*11I ****
*70*1437 *71*YEP *72*15 B ****
*70*1438 *71*DFP *72*11 IR *77*7I *78*6R ****
*70*1439 *71*FFP *72*19 B ****
*70*1440 *71*GFP *72*9R *77*4I *78*4R ****
*70*1441 *71*LFP *72*8B *74*1I *75*1B *77*4I *78*4R ****
*70*1442 *71*SFP *72*1R *74*1R *75*1R *77*4R, 1R ****
*70*1443 *71*WFP *73*3B *74*1I *76*1R *77*4I *78*4R ****
*70*1444*71*XFP *72*7B, 8B *73*3B *74*1I *75*1R *76*1R *77*4I, 1I ****
*70*1445 *71*DGP *72*1C I *77*5I *78*5R ****
*70*1446 *71*GGP *74*1I *75*1B, 7R ****
*70*1447 *71*LGP *72*1I *74*4I *75*1R *76*1R *77*1I *78*1R ****
*70*1448 *71*MGP *73*1B *74*1I *75*1R *76*1R ****
*70*1449 *71*UGP *72*1R *73*1R *74*1I *75*1B *77*1I ****
*70*1450 *71*XGP *72*1 IB *73*1B *74*1 IR ****
*70*1451 *71*YGP *72*1R *74*1R *76*1R *77*1R ****
*70*1452 *71*LYGP *74*8I *75*8B *76*14 R ****
*70*1453 *71*ZGP *72*30 B, 14 R*73*17 R*74*4 I*77*9 I*78*8 R****
*70*1454 *71*DHP *72*11 IR *73*5R *76*7R *77*7I *78*6R ****
*70*1455 *71*LHP *72*7I *73*3B *74*1I *75*1R *76*1R *77*4I *78*4R ****
*70*1456 *71*RHP *72*7I, 9I *73*3R *75*1R *78*4R ****
*70*1457 *71*SHP *72*7B *73*3B *74*1I *77*4I ****
*70*1458 *71*XHP *72*7I *75*1R ****
*70*1459 *71*WXHP *74*8I *75*8B ****
*70*1460 *71*YHP *72*7I *73*3R *74*1R *75*1R *76*1R *77*4I ****
*70*1461 *71*AIP *77*11 I ****
*70*1462 *71*OIP *72*18 R ****
*70*1463 *71*XIP *72*17 I *73*10 R ****
*70*1464 *71*XIP *74*6B *75*6B ****
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*70*1465 *71**KP *73*3R ****
*70*1466 *71*DKP *73*5R *74*2I *75*2R *76*7R *77*7I *78*6R ****
*70*1467 *71*GKP *72*1R ****
*70*1468 *71*IKP *73*3R *74*1I *76*1R ****
*70*1469 *71*QKP *72*1I *74*1I ****
*70*1470 *71*XKP *73*3R *74*1 IR *75*1R *76*1R *77*4I *78*4R ****
*70*1471 *71*YKP *74*1I *75*1R *76*1R *77*4I ****
*70*1472 *71*ZKP *72*30 I****
*70*1473 *71*DLP *77*5R ****
*70*1474 *71*JNP *74*1I *75*1R *76*1R *77*4I *78*1R ****
*70*1475 *71*LNP *72*7R *74*1R ****
*70*1476 *71*MPNP *74*8I *75*8R *76*14 R ****
*70*1477 *71*CNP *74*1R *75*1R *76*1R ****
*70*1478 *71*WNP *74*1I *75*1R *76*1R *77*1I ****
*70*1479 *71*XNP *74*1I *75*1R *76*1R ****
*70*1480 *71*YNP *74*1R *75*1R *76*1R ****
*70*1481 *71*CZP *74*1R *75*1R *76*1R ****
*70*1482 *71*AQP *72*8R ****
*70*1483 *71*BQP *72*8R *74*1R *77*4I *78*4R ****
*70*1484 *71*DQP *72*11 R *73*5R *74*2I *75*2R *76*7R ****
*70*1485 *71*GQP *72*9 IR *74*1 IR *75*1R *76*1R *77*4I *78*4R ****
*70*1486 *71*OIQP *74*9I *75*9R *76*19 R ****
*70*1487 *71*JQP *72*7I *73*3R *74*1I *76*1R *77*4I, 1I *78*4R ****
*70*1488 *71*QQP *72*1R *74*7I *75*1R *76*13 R ****
*70*1489 *71*RQP *72*8R *73*3R *77*4I *78*4R ****
*70*1490 *71*WQP *72*8I *73*3R *77*4I *78*4                                        ****
*70*1491 *71*XQP *72*1I *73*3R *74*1I *75*1R *76*1R ****
*70*1492 *71*LRP *72*1I *73*1R *75*1R *77*1I *78*1R****
*70*1493 *71*MRP *72*1R *73*1R *74*1I *76*1R *77*1I *78*1R ****
*70*1494 *71*RPRP *74*8I *75*8R *76*14 R ****
*70*1495 *71*URP *72*1I *73*1R *76*1R ****
*70*1496 *71*XRP *72*1 IR *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1497 *71*DTP *73*4R *74*2I *75*2R *76*7R ****
*70*1498 *71*GTP *72*9I *73*3R *74*1I *75*1R *76*1R *77*4I ****
*70*1499 *71*HTP *72*7I, 1I *74*1I *75*1R ****
*70*1500 *71*LTP *72*7R *73*3R *76*1R *77*4I *78*4R ****
*70*1501 *71*SPTP *74*8I *75*8R *76*14 R ****
*70*1502 *71*QTP *74*1I *75*1R ****
*70*1503 *71*RTP *72*8I *77*4I ****
*70*1504 *71*STP *74*1I *75*1R ****
*70*1505 *71*UTP *72*9 IR, 7I R *74*1I *75*1R *76*1R ****
*70*1506 *71*WTP *72*7R *74*1I *77*4I *78*4R ****
*70*1507 *71*YTP *72*7R *73*3R *74*1I *76*1R *77*1I ****
*70*1508 *71**VP *72*9R ****
*70*1509 *71*AVP *73*2R *74*1I *75*1R *76*1R *77*3I *78*3R ****
*70*1510 *71*DVP *72*11 R *73*5R *74*2I *75*2R *76*7R *77*7I ****
*70*1511 *71*GVP *72*1I *73*3R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1512 *71*LVP *73*3R *74*1I *75*1R *76*1R *77*4I *78*1R ****
*70*1513 *71*OVP *74*3R *75*3R ****
*70*1514 *71*UPVP *74*8I *76*14 R ****
*70*1515 *71*UVP *72*2C R, 1R *74*7R, 1R *76*1R *77*14 R, 1 IR ****
*70*1516 *71*XVP *72*7I, 1I *73*3R *74*1I *75*1R *76*1R *77*1R *78*1R ****
*70*1517 *71*AWP *72*7I, 1I *73*3R *74*1I *75*1R *77*1R *78*1R ****
*70*1518 *71*AAWP *74*8R *75*8R *76*14 R ****
*70*1519 *71*CWP *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1520 *71*DWP *73*5R *74*2R *75*2R *76*7R ****
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*70*1521 *71*FWP *74*1I *75*1R *77*4I *78*4R ****
*70*1522 *71*HWP *72*1I *73*1R *74*1R ****
*70*1523 *71*LWP *74*1R *75*1R ****
*70*1524 *71*MWP *72*7I *73*3R *74*1I *76*1R *78*4R ****
*70*1525 *71*RWP *72*8R ****
*70*1526 *71*SWP *72*1 IR *73*3R *74*1 IR *77*4I, 1I *78*4R ****
*70*1527 *71*XWP *72*7I, 1I *73*3R *74*1I *75*1R *77*1I ****
*70*1528 *71*YWP *72*7 IR *73*3R *74*1I *76*1R *77*4I *78*4R ****
*70*1529 *71*LNXP *74*8R *75*8R *76*14 R ****
*70*1530 *71**YP *72*9I *73*3R *74*1I *75*1R *76*6 R  *77*1 I*78*1 R****
*70*1531 *71**YP *72*9R *73*3R *77*1R ****
*70*1532 *71*AYP *72*7R *74*1I *76*1R *77*4I, 1I ****
*70*1533 *71*BYP *73*3R *77*4I *78*1R ****
*70*1534 *71*DYP *72*11I, 10 R *73*5R *74*2I *77*7I *78*6R ****
*70*1535 *71*JYP *72*7I, 8I *73*3R *74*1I *75*1R *77*4I *78*4R, 1R ****
*70*1536 *72*LYP *71*8IR *73*3R *74*1I *75*1R *76*1R *77*4I *78*4R****
*70*1537 *71*MYP *72*7R *74*1I *76*1R *77*1I ****
*70*1538 *71*SYP *72*7R *73*3R *74*1I *75*1R *76*1R *77*1I ****
*70*1539 *71*WYP *73*3R *77*4I ****
*70*1540 *71*WYP *72*8R *73*3R *74*1I *75*1R *76*1R *77*4I *78*4R ****
*70*1541 *71*XYP *72*7 IR, 8 IR *74*10 I *75*1 R *77*4 I ****
*70*1542 *71*ZYP *72*30 R *73*17R *78*8 R ****
*70*1543 *71*AZP *72*1R *73*1R ****
*70*1544 *71*FZP *73*3R *74*1 IR *76*1R *77*4I *78*4R ****
*70*1545 *71*GZP *73*3R *74*1I *75*1R *76*1R *77*1I ****
*70*1546 *71*JZP *72*9R, 8R *73*3R *76*1R *77*1I *78*4R ****
*70*1547 *71*OZP *72*21 I *73*3R *78*14 R****
*70*1548 *71*QZP *72*1I ****
*70*1549 *71*RZP *73*3R ****
*70*1550 *71*UZP *72*7I *73*3R *74*1I *75*1R *78*4R ****
*70*1551 *71*WZP *72*7I *73*3R *74*1I *75*1R *76*1R *77*4I *78*1 R, 4 R****
*70*1552 *71*XZP *72*8R *73*3R *74*1R *76*1R *77*4I *78*4R ****
*70*1553 *71*YZP *72*7I *73*3R *74*1R *77*1I *78*1R ****
*70*1560 *71*A*Q *72*1R *74*1I *75*1R *76*5R ****
*70*1561 *71*O*Q *72*12 R *76*17R,8R *77*8I ****
*70*1562 *71**AQ *72*1I *73*1R ****
*70*1563*71*AAQ*72*19 I, 20 R, 1 R*73*11 R*74*7 I, 1 I*75*7 R, 1 R*76*5 R
*77*14 I *78*12 R ****
*70*1564 *71*JAQ *72*1I *73*1R *74*1I *75*1R *76*5R *77*1R *78*1R ****
*70*1565 *71*LAQ *72*1 IR *73*1R *74*1I *75*1R *76*5R ****
*70*1566 *71*OAQ *74*3I *75*3R *76*17 R ****
*70*1567 *71*AQAQ *74*8R *75*8R *76*17 R ****
*70*1568 *71*XAP *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*1569 *71*XXAQ *74*8R *75*8R ****
*70*1570 *71*ABQ *72*1R *74*1R ****
*70*1571 *71*CBQ *72*1R *74*1R ****
*70*1572 *71*LBQ *72*1R *73*1R *74*1I *75*1R *77*1 IR *78*1R ****
*70*1573 *71*OPBQ *74*9I *75*9R ****
*70*1574 *71*BQBQ *74*8I *75*8R ****
*70*1575 *71*SBQ *72*1R *73*1R *74*1I *75*1R *76*5R *77*1I ****
*70*1576 *71*XBQ *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*1577 *71*WCQ *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*1578 *71*XCQ *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I ****
*70*1579 *71*CDQ *74*1I *77*1I ****
*70*1580 *71*XDQ *77*1R *78*1R ****
*70*1581 *71*XXDQ *76*17 R ****
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*70*1582 *71*BEQ *72*15 I R *73*8R *74*1R ****
*70*1583 *71*CEQ *72*15 I *76*26 R *78*9 R ****
*70*1584 *71*CIQ *74*1I *76*5R ****
*70*1585 *71*DEQ *76*31R*77*5I *78*7R ****
*70*1586 *71*GEQ *72*17 I *77*11 I ****
*70*1587 *71*HEQ *72*15 R *73*4R *77*10 I, 11 I *78*9 R****
*70*1588 *71*JEQ *72*15 I *73*4R *77*10 I, 11 I *78*9 R ****
*70*1589 *71*MEQ *73*4R ****
*70*1590 *71*SEQ *72*15 R *76*26 R ****
*70*1591 *71*XEQ *72*15 R *74*5I *75*5R *77*10 I *78*9R ****
*70*1592 *71*XEQ *74*1I ****
*70*1593 *71*ZEQ *73*18 R *77*11 I *78*11 R ****
*70*1594 *71*AGQ *72*1I *73*1R *76*5R *77*1I ****
*70*1595 *71*DGQ *72*1C R *73*4R *74*2I *77*5I ****
*70*1596 *71*HGQ *72*1I *73*1R *76*5R ****
*70*1597 *71*SGQ *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I ****
*70*1598 *71*XGQ *72*1I *73*1R *74*1I *76*1R ****
*70*1599 *71*XGXGQ *74*8I ****
*70*1600 *71*XXGQ *74*8I *76*17 R ****
*70*1601 *71**HQ *77*1I ****
*70*1602 *71*DHQ *72*1C R *73*4R *77*5I ****
*70*1603 *71*CHQ *72*12 R *77*8I *78*7R ****
*70*1604 *71*SHQ *72*1R *75*1R *78*1R ****
*70*1605 *71*XHQ *72*1I *73*1R *74*1I ****
*70*1606 *71*AIQ *72*17 I *76*5R *77*11 R ****
*70*1607 *71*BIQ *74*6I *75*6R *76*5R ****
*70*1608 *71*CIQ *74*6I *75*6R *76*5R ****
*70*1609 *71*GIQ *74*17I*77*11 I ****
*70*1610 *71*MIQ *72* 17 I *77*11 I ****
*70*1611 *71*MIQ *74*6I *75*6R *76*5R ****
*70*1612 *71*CIQ *74*3R *75*3R ****
*70*1613 *71*QIQ *74*6R *75*6R ****
*70*1614 *71*BIQ *74*1I *76*5R ****
*70*1615 *71*SIQ *74*6I *75*6R *76*5R ****
*70*1616 *71*XIQ *74*6I *75*6R ****
*70*1617 *71*DKQ *72*1C I *74*2R *75*2R ****
*70*1618 *71*JKQ *72*19 I, 1I *73*1R *74*7I, 1I *75*1R *76*18 R *77*14 T ****
*70*1619 *71*LKQ *72*1R *73*3R *74*1I *75*1R *76*5R *77*1 IR *78*1R ****
*70*1620 *71*MKQ *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*1622 *71*JQ[illegible]Q *74*8I *75*8R *76*17 R ****
*70*1623 *71*SKQ *72*1I *77*1I ****
*70*1624 *71*XKQ *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*1625 *71*ZKQ *72*14 I *73*7R *77*9R ****
*70*1626 *71**LQ *74*1I *75*1R *77*1I ****
*70*1627 *71*CLQ *72*1R *74*1I *75*1R *77*1I ****
*70*1628 *71*DLQ *72*10 I *74*2I *75*2R ****
*70*1629 *71*GLQ *72*1I *73*1R *74*1R *75*1R *76*5R ****
*70*1630 *71*LLQ *72*19 I, 1I *73*1R *74*7 IR, 1 IR *76*5R, 18 R *77*1I *78*1R *
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*70*1631 *71*MLQ *74*1I *75*1R ****
*70*1632 *71*LQLQ *74*8I *75*8R *76*17 R ****
*70*1633 *71*RLQ *74*1I ****
*70*1634 *71*MRLQ *74*8R *75*8R ****
*70*1635 *71*SLQ *72*1R *73*1R *74*1I *75*1R *76*5R ****
*70*1636 *71*WLQ *72*1I *73*1R *74*1I *75*1R *76*5R ****
*70*1637 *71*ZLQ *73*7R *74*2I *75*4R ****
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*70*1638 *71**NQ *73*1R *74*1I *75*1R *76*5R ****
*70*1640 *71*JNQ *72*1I *73*1R *74*1I *75*1R *76*5R *77*1R *78*1R ****
*70*1641 *71*LNQ *74*1I *75*1R *76*1R *77*1R ****
*70*1642 *71*MNQ *74*1I *75*1R *76*5R ****
*70*1643 *71*ONQ *73*6R *74*3I *75*3R *76*17 R ****
*70*1644 *71*MQNQ *74*8R *75*8R ****
*70*1645 *71*WNQ *72*1R *74*1I *75*1R *76*5R *77*1R ****
*70*1646 *71*XNQ *72*1R *73*1R *74*1I *75*1R *76*5R ****
*70*1647 *71*XXNQ *74*8I *75*8R ****
*70*1648 *71*XZNQ *74*8R *75*8R ****
*70*1649 *71*XBPQ *74*8R *75*8R *76*17 R ****
*70*1650 *71*LCPQ *74*8I *75*8R ****
*70*1651 *71*WCPQ *74*8I *75*8R ****
*70*1652 *71*DPQ *74*2R ****
*70*1653 *71*XEPQ *74*8I *75*8R *76*17 R ****
*70*1654 *71*HPQ *72*1R ****
*70*1655 *71*XHPQ *74*8R ****
*70*1657 *71*OQPQ *74*9I ****
*70*1658 *71*SPQ *72*1I *74*1I *75*1R *76*5R *77*1R ****
*70*1659 *71*WPQ *72*1I *74*1I *75*1R ****
*70*1660 *71*XWPQ *74*8I *75*8R ****
*70*1661 *71*XPQ *74*1I *75*1R *76*5R ****
*70*1662 *71*CBQQ *74*9I *75*9R ****
*70*1663 *71*CRQ *72*1I *73*1R *74*1I *76*5R *77*1I *78*1R ****
*70*1664 *71*DRQ *72*10 R ****
*70*1665 *71*HRQ *78*1R ****
*70*1666 *71*SRQ *72*1R *74*1I *75*1R *76*5R *77*1I ****
*70*1667 *71*XRQ *72*1R *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*1668 *71*AXRQ *76*17 R ****
*70*1669 *71**TQ *72*1R ****
*70*1670 *71*BTQ *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*1671 *71*CTQ *72*1R *73*1R *77*1I* 78*1R ****
*70*1672 *71*DTQ *72*10 IR *73*4R *76*7R ****
*70*1673 *71*GTQ *72*1I *73*1R *74*1I *75*1R *76 *5R ****
*70*1674 *71*OTQ *72*12 I *73*6R ****
*70*1675 *71*QTQ *72*1R ****
*70*1676 *71*SQTQ *74*8I *75*8R ****
*70*1677 *71*XQTQ *74*8R *75*8R ****
*70*1678 *71*STQ *72*1R *76*18 R ****
*70*1679 *71*WTQ *72*1 IR *73*1R *74*1 IR *75*1R *76*5R *77*1 IR *78*1R****
*70*1680 *71*XTQ *72*1I *73*1R *74*1I *75*1R *76*5R ****
*70*1681 *71*CXTQ *74*8R*75*8R *76*17 R ****
*70*1682 *71*XXTQ *74*8I *75*8R ****
*70*1683 *71*ZTQ *72*14 I *77*9R ****
*70*1684 *71*AWQ *74*1I *75*1R *76*5R *77*1R ****
*70*1685 *71*CWQ *72*1R *73*1R *74*1I ****
*70*1686 *71*LWQ *72*1I *73*1R *74*1I *75*1R ****
*70*1687 *71*QWQ *75*1R ****
*70*1688 *71*SWQ *74*1I *76*5R *77*1R ****
*70*1689 *71*XWQ *72*1I *73*1R *74*1I *75*1R *77*1I ****
*70*1690 *71*CXWQ *74*9I *75*9R *76*17 R ****
*70*1691 *71*AXQ *74*1R *76*5R ****
*70*1692 *71*LAXQ *74*8I *75*8R *76*37 R ****
*70*1693 *71*OAXQ *74*9R *75*9R ****
*70*1694 *71*WAXQ *74*8R ****
*70*1695 *71*BXQ *72*1I *73*1R *74*1I *75*1R *76*5R ****
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*70*1696 *71*LBXQ *74*8I *75*8R ****
*70*1697 *71*CXQ *72*1R *77*1R ****
*70*1698 *71*DXQ *77*5R ****
*70*1699 *71*ADXQ *74*8R *75*8R ****
*70*1700 *71*GXQ *72*1R *73*1R *75*1R *76*5R *77*1R *78*1R ****
*70*1701 *71*HXQ *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*1702 *71*HHXQ *74*8I *75*8R ****
*70*1703 *71*CHXQ *76*37 R ****
*70*1704 *71*JXQ *72*1R *73*1R *74*1R *75*1R *76*5R *77*1I *78*1R ****
*70*1705 *71*HNXQ *74*8R *75*8R ****
*70*1706 *71*QXQ *74*1I *75*1R *76*5R *77*1R *78*1R ****
*70*1707 *71*XQXQ *74*8I *75*8R ****
*70*1708 *71*SXQ *74*1R ****
*70*1709 *71*WXQ *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*1710 *71*XXQ *72*1R *73*1R ****
*70*1711 *71*MZQ *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*1712 *71*XZQ *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*1713 *71*ZZQ *72*14 R *73*7R *74*4I *75*4R ****
*70*1721 *71*AAR *74*1I *77*1I ****
*70*1722 *71*CAR *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1723 *71*DAR *72*10 R *73*4R *74*2I *75*2R *76*7R *77*5I *78*5R ****
*70*1724 *71*HAR *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1725 *71*XAR *72*1I *73*1R *74*1I *75*1R *76*1I *77*1I *78*1R ****
*70*1726 *71*XXAR *74*8R *75*8R *76*14 R ****
*70*1727 *71*YAR *72*1R *74*1I *75*1R *76*1R *77*1R ****
*70*1728 *71*ZAR *74*4I *75*4R *76*9R ****
*70*1729 *71*ABR *72*1R *74*1I *76*1R *77*1R ****
*70*1730 *71*DBR *72*10 R *74*2R *75*2R ****
*70*1731 *71*LBR *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1732 *71*MBR *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1733 *71*OBR *72*12 R *73*6R *74*3I *75*3R *76*8R ****
*70*1734 *71*BRBR *74*8R ****
*70*1735 *71*CCR *72*1I *74*7I *75*7R *76*13 R ****
*70*1736 *71*DCR *72*10 IR *76*7R *77*5I *78*5R ****
*70*1737 *71*OKCR *74*9I *75*9R *76*19 R ****
*70*1738 *71*OCR *74*3I *75*3R *76*8R *77*8R ****
*70*1739 *71*CRCR *74*8R *75*8R *76*14 R ****
*70*1740 *71*SCR *72*1I *73*1R *77*1 IR *78*1R ****
*70*1741 *71*XCR *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1742 *71*YCR *72*1R ****
*70*1743 *71*AER *77*11 I, 10 I *78*9R ****
*70*1744 *71*BER *72*15 I *77*10 R *78*9R ****
*70*1745 *71*CER *74*5R *75*7R *76*10 R *77*10 I *78*9R ****
*70*1746 *71*CER *74*1I ****
*70*1747 *71*DER *72*10 IR *73*4R *74*2I *75*2R *77*5 IR ****
*70*1748 *71*FER *72*15 R *77*11 I, 10 I ****
*70*1749 *71*HER *72*15 R *77*10 R *78*9R ****
*70*1750 *71*LER *72*15 R *74*1I *76*1R ****
*70*1751 *71*CER *74*10R****
*70*1752 *71*RER *72*1R ****
*70*1753 *71*SER *72*15 R *74*5 IR *76*8R *77*11 I, 10 I *78*9R ****
*70*1754 *71*UER *72*15 I ****
*70*1755 *71*WER *77*10 I *78*9R ****
*70*1756 *71*XER *72*15 R *73*10 R *74*5I *76*10 R *77*11 I, 10 I *78*9R ****
*70*1757 *71*XER *74*1I *75*1R *76*1R ****
*70*1758 *71*YER *72*15 R *77*10 I ****
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*70*1759 *71*ZER*72*36 I  *73*10 R ****
*70*1760 *71*ZER *74*4I *75*4R *76*9R ****
*70*1761 *71*AFR *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1762 *71*FFR *72*19 R, 20 R *73*1R *74*1I *76*1R *77*14 I *78*12 R ****
*70*1763 *71*MFR *76*1R ****
*70*1764 *71*WFR *72*1I *73*1R *74*1I *75*1R *77*1I ****
*70*1765 *71*XFR *72*1I *73*1R *76*1R *77*1I *78*1R ****
*70*1766 *71*CHR *72*10 I *73*4R *76*7R *77*5I *78*10 R ****
*70*1767 *71*HHR *74*1R *77*1R ****
*70*1768 *71*CHR *72*12 I *73*6R *75*3R ****
*70*1769 *71*SHR *72*1 IR *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1770 *71*XHR *72*1 IR *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1771 *71*OXHR *74*9I *75*9R ****
*70*1772 *71*YHR *72*1R *74*1 IR *75*1R *76*1R *77*1I ****
*70*1773 *71*AIR *72*17 R *74*6R *77*10 R ****
*70*1774 *71*CIR *74*6R *75*6R ****
*70*1775 *71*DIR *74*2R *75*2R ****
*70*1776 *71*HIR *72*17 R *77*10 R *78*9R ****
*70*1777 *71*CIR *72*12 I *74*3 IR *75*3R *76*8R ****
*70*1778 *71*SIR *72*3R *74*1I *75*1R *76*1R ****
*70*1779 *71*SIR *72*17 R ****
*70*1780 *71*UIR *74*6R ****
*70*1781 *71*WIR *77*10 I *78*9R ****
*70*1782 *71*AKR *73*1R *74*1I *75*1R *76*1R *77*1R *78*1R ****
*70*1783 *71*DKR *74*2R ****
*70*1784 *71*LKR *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*1785 *71*MKR *76*1R ****
*70*1786 *71*CKR *74*3I *75*3R *76*8R ****
*70*1787 *71*QKR *74*1R *76*1R ****
*70*1788 *71*XKR *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1789 *71*ALR *72*1I *73*1R *76*1R *77*1I *78*1R ****
*70*1790 *71*BLR *73*1R *74*1I *76*1R ****
*70*1791 *71*DLR *72*10 R *73*4R *74*2I *75*2R *76*7R *77*5I *78*5R ****
*70*1792 *71*FLR *72*2 R, 3 R*73*1 R, 3 R*74*1 I*76*1 R*77*1 I****
*70*1793 *71*HLR *72*1I *74*1R *75*1R *76*1R *77*1I ****
*70*1794 *71*LLR *72*1R *73*1R *74*7I, 1I *75*7R *76*13 R, 1R *77*1I *78*1R****
*70*1795 *71*MLR *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1796 *71*QLR *72*1R *73*1R *74*1I *76*1R ****
*70*1797 *71*RLR *74*1I *75*1R ****
*70*1798 *71*LRLR *74*8I *76*14 R ****
*70*1799 *71*SLR *73*1R *74*1I *75*1R *76*1R *77*1R ****
*70*1800 *71*ULR *72*1R *73*1R *74*1I *76*1R *77*1I ****
*70*1801 *71*CNR *72*1 IR *73*1R *74*1I *76*1R *77*1I *78*1R ****
*70*1802 *71*DNR *72*10 R *77*5I ****
*70*1803 *71*LNR *72*1R *74*1I *76*1R *77*1I ****
*70*1804 *71*OLNR *74*9I *75*9R *76*19 R ****
*70*1805 *71*ULNR *74*8R ****
*70*1806 *71*MNR *72*19 I, 1I *74*1I *75*1R *76*13 R, 1R *77*1I, 15 I *78*12R, 1
R ****
*70*1807 *71*QNR *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1808 *71*MRNR *74*8I *75*8R *76*14 R ****
*70*1809 *71*UNR *72*1I *74*1I *75*1R *76*1R ****
*70*1810 *71*WNR *72*2R *74*1R *75*1R *76*1R *77*1I *78*1R ****
*70*1811 *71*XNR *72*1R *74*1I *76*1R *77*1R ****
*70*1812 *71*YNR *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1813 *71*ZNR *72*14 R *73*7R *74*4I *75*4R *77*9I *78*14R****
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*70*1814 *71*APR *72*1I *73*1R *74*1R *77*1R ****
*70*1815 *71*LAPR *76*14 R ****
*70*1816 *71*BPR *74*1I *75*1R *76*1R *77*1I ****
*70*1817 *71*CPR *72*1I *73*1R *74*1I *77*1I ****
*70*1818 *71*DPR *72*10 IR *73*4R *74*2I *75*2R *76*7R *77*5R ****
*70*1819 *71*EPR *76*1R ****
*70*1820 *71*IPR *73*4R *77*5R ****
*70*1821 *71*CIPR *74*9I *75*9R *76*19 R ****
*70*1822 *71*OPR *73*6R *74*4I, 3I *75*8R, 4R *76*8R *77*8I ****
*70*1823 *71*SPR *72*1R *73*1R *74*1R *75*1R *76*1R *77*1I *78*1R ****
*70*1824 *71*WPR *72*1I *76*1R *77*1I *78*1R ****
*70*1825 *71*YPR *72*1I *73*1R *74*12 *75*1R *76*1R *77*1I *78*1R ****
*70*1826 *71*ZPR *74*4R *75*4R ****
*70*1827 *71*DQR *74*2I *75*2R ****
*70*1828 *71*CQR *72*19 I *76*1R *77*1I ****
*70*1829 *71*WQR *72*1R *73*1R *74*1I *76*1R *77*1I *78*1R ****
*70*1830 *71*XRR *72*15R, 1R *73*10 R *74*5I, 1R *76*10 R *77*10 I, 11 I, 1I *78
*9R ****
*70*1831 *71*DTR *72*10 R ****
*70*1832 *71*LTR *74*1R *75*1R *77*1R ****
*70*1833 *71*SRTR *74*8R *76*14 R ****
*70*1834 *71*UTR *74*1I *75*1R *76*1R ****
*70*1835 *71*XTR *74*1I *75*1R *76*1R ****
*70*1836 *71*YTR *72*1R *73*1R *74*1 IR *75*1R *76*1R ****
*70*1837 *71*AVR *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1838 *71*OAVR *74*9I *75*9R *76*19 R ****
*70*1839 *71*CVR *72*1R *73*1R ****
*70*1840 *71*DVR *72*10R *73*4R *74*2I *75*2R *76*7R ****
*70*1841 *71*LVR *73*1R *74*1I *76*1R ****
*70*1842 *71*OLVR *72*14 R ****
*70*1843 *71*MVR          *73*1R *74*1 IR *75*1R *76*1 IR *77*1I *78*1R ****
*70*1844 *71*SVR *77*1R ****
*70*1845 *71*UVR *77*1R ****
*70*1846 *71*XVR *72*1I *73*1R *74*1 IR *75*1R *76*1R *77*1I *78*1R ****
*70*1847 *71*AWR *72*1I *73*1R *74*1I *75*1R *76*1R *77*1R ****
*70*1848 *71*CWR *72*1I *73*1R *77*1I ****
*70*1849 *71*DWR *74*2I *75*2R ****
*70*1850 *71*LWR *72*1 IR *73*1R *74*1I *75*1R *76*1R *77*1R ****
*70*1851 *71*MWR *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1852 *71*SWR *72*1I *73*1R *74*1R *75*1R *76*1R *77*1I ****
*70*1853 *71*UWR *72*1I *73*1R *74*1I *75*1R *77*1I ****
*70*1854 *71*UVWR *74*8I *75*8R ****
*70*1855 *71*XWR *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1856 *71*AXWR *74*8R *75*8R *76*14 R ****
*70*1857 *71*YWR *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*1858 *71*AXR *72*1 IR, 2 IR *73*1R *74*1 IR *75*1R *76*1R *77*1 IR ****
*70*1859 *71*AAXR *74*8I *75*8R *76*14 R ****
*70*1860 *71*LAXR *74*8I *75*8R *76*14 R ****
*70*1861 *71*BXR *72*1 IR ****
*70*1862 *71*LBXR *74*8I *75*8R *76*14 R ****
*70*1863 *71*DXR *72*9R *73*4R *74*2I *75*2R *76*7R *77*5I *78*5R ****
*70*1864 *71*LHXR *74*8I *75*8R *76*14 R ****
*70*1865 *71*JXR *72*1I *73*1R *74*1I *76*1R *77*1I *78*1R ****
*70*1866 *71*IKXR *74*8R *76*14 R ****
*70*1867 *71*LXR *72*1I *73*1R *76*1R *77*1I ****
*70*1868 *71*MXR *72*1I *73*1R *74*1I *75*1R *76*1R *77*1 IR *78*1R ****
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*70*1869 *71*MNXB *74*8R *76*14 B ****
*70*1870 *71*QXR *74*1I *75*1R *76*1R ****
*70*1871 *71*LQXB *74*8I *76*14 B ****
*70*1872 *71*RXR *74*1R ****
*70*1873 *71*XRXB *74*8I *75*8R *76*14 R ****
*70*1874 *71*SXR *72*1I *73*1R *76*1R *77*1 IR ****
*70*1875 *71*LTXB *74*8I *75*8R *76*14 B ****
*70*1876 *71*UXR *72*1 IR *73*1R *77*1I *78*1R ****
*70*1877 *71*WXB *72*1R *77*1I ****
*70*1878 *71*XXR *72*1R *74*1R *77*1I ****
*70*1879 *71*AYB *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1880 *71*AAYR *74*8R ****
*70*1881 *71*DYR *72*1C I *73*4R *74*2I *75*2R *77*5I ****
*70*1882 *71*CYR *72*13R, 1R *73*6R *74*3I *75*3R *76*8R *77*8I *78*7R ****
*70*1883 *71*WYR *72*1I *73*1R *74*1R *75*1R ****
*70*1884 *71*WYB *72*1R *74*1I *76*1R ****
*70*1885 *71*XYR *72*2R *73*1R *74*1I *76*1R *77*1 IR ****
*70*1886 *71*XYR *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1887 *71*YYR *72*2R *73*1I *74*1R *76*1R *77*1I ****
*70*1888 *71*ZYB *72*39 R *73*7R *74*4R *75*4R *76*9R ****
*70*1889 *71*CZR *72*1R *74*1I *75*1R *76*1R ****
*70*1890 *71*DZR *74*2R *75*2R ****
*70*1891 *71*MZR *72*1I *73*1R *77*1I ****
*70*1892 *71*ONZR *75*9R *76*19 R ****
*70*1893 *71*WZR *72*2R *73*1R *74*1I *75*1R *76*1R *77*1IR *78*1R ****
*70*1894 *71*XZR *72*2R *73*1R *74*1R *76*1R   *77*  1I                ****
*70*1903 *71*D+T *74*2I *76*7R *77*5I *78*5R ****
*70*1904 *71*X+T *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1905 *71*PBT *74*1I ****
*70*1906 *71*FBT *77*1I *78*1R ****
*70*1907 *71*LBT *73*1R *74*1I *75*1R *76*1R ****
*70*1908 *71*MBT *72*1I *73*1R *76*1R *77*1I ****
*70*1909 *71*CBT *76*8R *77*8I *78*7R ****
*70*1910 *71*RBT *72*1 IR *73*1R *77*1I ****
*70*1911 *71*BTBT *76*14 R ****
*70*1912 *71*XBT *72*1R *73*1R *74*1R *75*1R *76*1R *77*1R *78*1R ****
*70*1913 *71*YBT *72*1I *73*1R *74*1I *76*1R *77*1I *78*1R ****
*70*1914 *71*DCT *72*10 I *73*4R *77*5I *78*5R ****
*70*1915 *71*RCT *72*1I *73*1R *77*1I ****
*70*1916 *71*XCT *73*1R *74*1I *75*1R *76*1R ****
*70*1917 *71*WDT *72*1R *74*1R *76*1R ****
*70*1918 *71*BET *72*15 IR *73*8R *74*5I *76*10 R *77*11 I *78*9R ****
*70*1919 *71*GFT *72*15 I R *77*11 I ****
*70*1920 *71*OET *72*16 R *73*9R ****
*70*1921 *71*BET *77*11 I ****
*70*1922 *71*UET *72*15 R *73*8R *74*5R *75*5R *76*10 R *77*10 I, 11 I *78*9R **
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*70*1923 *71*WET *72*15 B *77*11 B *78*9R ****
*70*1924 *71*XET *72*15 R *74*5R *75*5R *76*1C R *77*11 I *78*9R ****
*70*1925 *71*YET *72*15 R *73*8R ****
*70*1926 *71*DFT *74*2I *75*2R ****
*70*1927 *71*FFT *72*19 R *73*11 R *74*7I, 1I *75*1R *77*15 I *78*12 R ****
*70*1928 *71*LFT *72*1R *73*1R *77*1I ****
*70*1929 *71*MFT *72*1R *73*1R *74*1I *75*1R *76*1R ****
*70*1930 *71*WNFT *74*8I *75*8R *76*14 B ****
*70*1931 *71*XFT *72*1R *73*1R *74*1I *75*1R *76*1R *78*1R ****
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*70*1932 *71*CGT *72*1R *73*1R *74*1 IR *75*1R *76*1R *77*1I *78*1R ****
*70*1933 *71*FGT *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1934 *71*GGT *72*1R *77*14 R ****
*70*1935 *71*ULGT *74*7I *75*8R ****
*70*1936 *71*MGT *72*1R *73*1R *74*1I *75*1R *76*1R ****
*70*1937 *71*CNGT *74*9I *76*19 R ****
*70*1938 *71*QGT *72*1I *73*1R ****
*70*1939 *71*GTGT *74*8R ****
*70*1940 *71*XGT *72*1I *74*1I *76*1R ****
*70*1941 *71*ZGT *72*14 I *73*7R *74*4I *76*9R *77*9I *78*8R ****
*70*1942 *71*HHT *74*1R ****
*70*1943 *71*MHT *72*1R *73*1R *74*1I *75*1R *76*1R ****
*70*1944 *71*HTHT *74*8IR *75*8R *76*14 R ****
*70*1945 *71*XHT *72*1 IR *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1946 *71*CXHT *74*9R *75*9R ****
*70*1947 *71*YHT *74*1R ****
*70*1948 *71*BIT *74*6I *75*6R*76*1R ****
*70*1949 *71*GIT *74*1I *75*1R ****
*70*1950 *71*HIT *74*6I *75*6R *76*1R ****
*70*1951 *71*JIT *74*6I *75*6R ****
*70*1952 *71*MIT *76*1R ****
*70*1953 *71*ÇIT *73*8R *77*11 I *78*9R ****
*70*1954 *71*QIT *74*6I *75*6R *76*1R ****
*70*1955 *71*WIT *72*17 R *77*11 I *78*9R ****
*70*1956 *71*ZIT *74*4R *75*4R ****
*70*1957 *71*DKT *74*2R *75*2R ****
*70*1958 *71*GKT *74*1I *75*1R *76*1R ****
*70*1959 *71*JTKT *74*8R ****
*70*1960 *71*XKT *72*1I *74*1I *75*1R ****
*70*1961 *71**LT *73*1R *74*1I *75*1R *76*1R *77*1 IR *78*1R ****
*70*1962 *71*LALT *74*8R *75*8R *76*14 R ****
*70*1963 *71*BLT *72*1R *73*1R *74*1I *75*1R *76*1R *77*1 IR *78*1R ****
*70*1964 *71*CLT *74*1R *75*1R *76*1R *77*1I *78*1R ****
*70*1965 *71*DLT *72*1C I *73*4R *74*2I *76*7R *77*5I *78*5R ****
*70*1966 *71*FLT *74*1R *75*1R *76*1R ****
*70*1967 *71*GLT *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*1968 *71*CGLT *74*9R *75*9R ****
*70*1969 *71*HLT *72*1IR *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*1970 *71*ILT *73*1R *74*1 IR *75*1R *76*1R *77*1I ****
*70*1971 *71*MLT *72*1R *73*1R *75*1R ****
*70*1972 *71*ÇNLT *76*14 R ****
*70*1973 *71*ÇLT *73*1R *74*1I *75*1R *76*1R *77*1R ****
*70*1974 *71*SQLT *74*8R *75*8R *76*14 R ****
*70*1975 *71*LTLT *74*8 IR *75*8R *76*14 R ****
*70*1976 *71*ULT *74*1I *75*1R *76*1R *77*1I ****
*70*1977 *71*YLT *72*1R *74*1I *75*1R *76*1R *77*1I ****
*70*1978 *71*DANT *74*2R *75*2R ****
*70*1979 *71*MANT *74*3R ****
*70*1980 *71*MTNT *74*8R ****
*70*1981 *71*ÇGPT *76*14 R ****
*70*1982 *71*BPT *76*1R ****
*70*1983 *71*DPT *72*10 R *73*4R *74*2I *75*2R *76*7R *77*5I *78*5R ****
*70*1984 *71*MPT *77*1I ****
*70*1985 *71*CPT *77*8R ****
*70*1986 *71*WPT *74*1I *75*1R *76*1R ****
*70*1987 *71*QWPT *74*8I *75*8R ****
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*70*1988 *71*XZPT *76*14 R ****
*70*1989 *71*BQT *72*1I *74*1I *75*1R *77*1R****
*70*1990 *71*CQT *72*2R *73*1R *76*1R *77*1I *78*1R ****
*70*1991 *71*DQT *72*1C R ****
*70*1992 *71*GQT *72*1R *73*1R *74*1R *76*1R *77*1I ****
*70*1993 *71*XHCT *74*8I *75*8R *76*14 R ****
*70*1994 *71*LQT *72*1I *73*1R *74*1I *75*1R *77*1I ****
*70*1995 *71*CQT *72*19 I R****
*70*1996 *71*RQT *72*1R *74*1R *77*1R ****
*70*1997 *71*CTCT *74*8I *75*8R *76*14 R ****
*70*1998 *71*WQT *72*1 IR *73*1R *74*1I *75*1R *76*1R *77*1 IR *78*1R ****
*70*1999 *71*DRT *72*10 R *74*2R *77*5I *78*5R ****
*70*2000 *71*HRT *73*1R *74*1R *75*1R *76*1R *77*1R ****
*70*2001 *71*LRT *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2002 *71*MRT *72*1I *73*1R *74*1I *76*1R *77*1I ****
*70*2003 *71*GPRT *74*8I *75*8R *76*14 R ****
*70*2004 *71*RTRT *74*8I *76*14 R ****
*70*2005 *71*XRT *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*2006 *71*DTT *74*2R ****
*70*2007 *71*STTT *74*8R ****
*70*2008 *71*DVT *72*10 I *73*4R *74*2I *75*2R *77*5I ****
*70*2009 *71*GVT *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*2010 *71*LVT *72*1R *73*1R *74*1I *75*1R *76*1R *77*1 IR *78*1R ****
*70*2011 *71*RVT *72*1I *73*1I*74* 1I*75*1R *76*1R *77*1 IR *78*1R ****
*70*2012 *71*UTVT *74*8I *75*8R *76*14 R ****
*70*2013 *71*UVT *72*1R *74*7I, 1I *75*7R, 1R *76*13 R *77*1I *78*1R ****
*70*2014 *71*XVT *72*1 IR *76*1R *77*1R ****
*70*2015 *71*CWT *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2016 *71*GWT *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*2017 *71*LWT *74*1I *75*1R ****
*70*2018 *71*MWT *72*1I *73*1R ****
*70*2019 *71*CWT *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70* 2020 *71*RWT *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2021 *71*WTWT *74*8 IR *75*8R *76*14 R ****
*70*2022 *71*WWT *72*19I, 1I *73*1R *74*1R *75*1R *76*1R ****
*70*2023 *71*XWT *72*1R *73*1R *76*1R *77*1I *78*1R ****
*70*2024 *71**XT *73*1R *76*1R *77*1I ****
*70*2025 *71*BXT *77*1I *78*1R ****
*70*2026 *71*CBXT *74*8R *75*8R *76*14 R ****
*70*2027 *71*LBXT *74*8I *75*8R ****
*70*2028 *71*CXT *72*1R *73*1R *74*1IR *75*1R *76*1R *77*1I *78*1R ****
*70*2029 *71*QCXT *74*8R *75*8R ****
*70*2030 *71*DXT *72*10 R *74*2R *77*5I *78*5R ****
*70*2031 *71*QDXT *74*8I *75*8R *76*14 R ****
*70*2032 *71*FXT *72*1R *73*1R *74*1I *75*1R *77*1I *78*1R ****
*70*2033 *71*LFXT *74*8I *75*8R *76*14 R ****
*70*2034 *71*GXT *72*1R *73*1R *74*1R *75*1R *76*1R *77*1 IR *78*1R ****
*70*2035 *71*GGXT *76*14 R ****
*70*2036 *71*HXT *72*1I R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2037 *71*JXT *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2038 *71*QKXT *74*8I *75*8R *76*14 R ****
*70*2039 *71*MXT *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*2040 *71*OXT *76*8R *77*8I ****
*70*2041 *71*CPXT *74*8I *75*8R *76*14 R ****
*70*2042 *71*WPXT *74*8I *75*8R *76*14 R ****
*70*2043 *71*ZPXT *76*9R ****
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*70*2044 *71*CXT *72*1I *73*1R *74*1I *76*1R *77*1I ****
*70*2045 *71*MQXT *74*8I *75*8R *76*14 R ****
*70*2046 *71*BXT *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2047 *71*YRXT *74*8R *75*8R ****
*70*2048 *71*SXT *72*1I *73*1R *74*1I ****
*70*2049 *71*XTXT *74*8I *75*8R *76*14 R ****
*70*2050 *71*UXT *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2051 *71*MVXT *74*8R *75*8R *76*14 R ****
*70*2052 *71*SVXT *74*8I *75*8R *76*14 R ****
*70*2053 *71*WXT *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2054 *71*CWXT *74*8I *75*8R *76*14 R ****
*70*2055 *71*HLWXT *74*8R ****
*70*2056 *71*QWXT *74*8I *75*8R *76*14 R ****
*70*2057 *71*XXT *74*1I, 7I *75*1R, 7R *76*1R, 13R *77*14 R *78*12 R ****
*70*2058 *71*YXT *72*1 IR *73*1R *74*1 IR *75*1R *76*1R *77*1I *78*1R ****
*70*2059 *71*YXT *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*2060 *71*FYXT *74*8R *75*8R ****
*70*2061 *71*ZXT *74*4R *76*9R ****
*70*2062 *71*+YT *77*5R ****
*70*2063 *71*DYT *72*1C R *77*5R ****
*70*2064 *71*GYT *72*1R *73*1R *74*1I *75*1R *76*1R *78*1R ****
*70*2065 *71*HYT *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2066 *71*LYT *72*1I *73*1R                                        ****
*70*2067 *71*RYT *72*1R ****
*70*2068 *71*BYT *72*1R *73*1R *76*1R *77*1I ****
*70*2069 *71*YTYT *74*8I *75*8R ****
*70*2070 *71*WYT *72*1I *74*1I *75*1R *76*1R *77*1I ****
*70*2071 *71*XYT *72*1 IR *73*1R *74*1I *75*1R *76*1R *77*1 IR *78*1R ****
*70*2072 *71*OXYT *74*9R *75*9R *76*19 R ****
*70*2073 *71*MBZT *74*8R *75*8R ****
*70*2074 *71*DZT *72*1C IR *73*4R *74*2I *75*2R *76*7R *77*5I ****
*70*2075 *71*GZT *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*2076 *71*JZT *72*1I *73*1R *75*1R ****
*70*2077 *71*LZT *72*1R *73*1R *74*1I *75*1R *76*1R *78*1R ****
*70*2078 *71*MZT *72*1R *74*1R ****
*70*2079 *71*BZT *77*1I *78*1R ****
*70*2080 *71*ZTZT *74*8I *76*14 R ****
*70*2081 *71*WZT *72*1R *73*1R *74*1I *75*1R *76*1R ****
*70*2082 *71*XZT *72*1I *73*1R ****
*70*2083 *71*ZZT *72*19I, 1I *74*1I ****
*70*2090 *71*D+V *74*2I ****
*70*2091 *71*L+V *72*1R ****
*70*2092 *71*+AV *72*1R *73*1R *77*1I *78*1R ****
*70*2093 *71*DAV *72*1C R *73*4R *74*2I *77*5I ****
*70*2094 *71*HAV *72*1I *73*1R *77*1I *78*1R ****
*70*2095 *71*RAV *72*1R *73*1R *74*1I *75*1R *76*4R *77*1 IR *78*1R ****
*70*2096 *71*XAV *72*1I *73*1R *76*4R *77*1I *78*1R ****
*70*2098 *71*DCV *72*1C IR *73*4R *77*5I *78*5R ****
*70*2099 *71*RCV *77*1I ****
*70*2100 *71*WCV *72*1R *73*1R *74*1I *75*1R *76*4R *77*1I *78*1R ****
*70*2101 *71*ADV *72*1 R*74*1I    *75*1R *76*4R *77*1 IR *78*1R ****
*70*2102 *71*LDV *72*1R *73*1R *74*       *76*4R *77*1I ****
*70*2103 *71*XDV *72*1R *74*1I *75*1R *76*4R *77*1I *78*1R ****
*70*2104 *71*BEV *72*15 R ****
*70*2105 *71*CEV *72*15 I *73*10 R *74*5I ****
*70*2106 *71*DEV *74*2I *75*2R *76*30 R****
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*70*2107 *71*GEV *72*1R *74*1I *76*4R *77*1 I ****
*70*2108 *71*MEV *72*15 B ****
*70*2109 *71*SEV *72*15 B *73*8R *77*11 I *78*9R ****
*70*2110 *71*UEV *74*1R ****
*70*2111 *71*WEV *72*15 B *77*10 I *78*9R ****
*70*2112 *71*XEV *72*15 IR *73*8R *77*11 R ****
*70*2114 *71*ZEV *72*14 B *76*29 B ****
*70*2115 *71*DGV *72*10 R ****
*70*2116 *71*GGV *72*20 IB *77*1I ****
*70*2117 *71*OGV *72*12 IR *73*6R *74*3I *75*3R *77*8I ****
*70*2118 *71*GVGV *74*8I *75*8B *76*4B ****
*70*2119 *71*WGV *72*1R*74*1R *76*4R *77*1I *78*1R ****
*70*2120 *71*WWGV *74*8R *76*16 R ****
*70*2121 *71*XGV *72*1B *74*1I *77*1I ****
*70*2122 *71*HHV *74*1I *75*1R ****
*70*2123 *71*AIV *74*6B *75*6B ****
*70*2124 *71*CIV *74*6I *75*6R *76*4R ****
*70*2125 *71*CIV *74*3I *75*3B *76*21 R ****
*70*2126 *71*UIV *72*17 R *77*11 I *78*9R ****
*70*2127 *71*UIV *74*6I *75*6B ****
*70*2128 *71*WIV *74*6R *75*6R ****
*70*2129 *71*XIV *74*6I *75*6B *76*39 B****
*70*2130 *71*ZIV *74*4I *75*4R ****
*70*2131 *71*ALV *72*1I *73*1B *74*1R *75*1R *76*4R *77*1I *78*1R ****
*70*2132 *71*DLV *72*10 I *73*4R *74*2R ****
*70*2133 *71*ADLV *74*8B *75*8B ****
*70*2134 *71*GLV *72*1 IB *73*1R *74*1R *77*1 IR *78*1R ****
*70*2135 *71*LLV *72*19 IR, 1 IR *73*11 B, 1 B *74*1I *75*1B *76*4R *77*15 I, 1I
 *78*12 B, 1 B ****
*70*2136 *71*MLV *74*1I *75*1R *76*4R *77*1I ****
*70*2137 *71*BLV *72*1B *73*1B *74*1R *75*1R *76*4R *77*1 IR ****
*70*2138 *71*SLV *72*1R *73*1R *76*4R *77*1I *78*1B ****
*70*2139 *71*LVLV *74*8B *75*8B *76*16 B ****
*70*2140 *71*WLV *74*1I *75*1R *76*4R ****
*70*2141 *71**NV *72*2B *73*1B *77*1I *78*1R ****
*70*2142 *71*BNV *74*1R *75*1R *76*4R ****
*70*2143 *71*CNV *72*1I *73*1B *74*1I *75*1R *76*4R *77*1I *78*1R ****
*70*2144 *71*GNV *72*1B *73*1B *74*1B *76*4R *77*1I *78*1R ****
*70*2145 *71*LNV *72*1R ****
*70*2146 *71*HPNV *74*8B *75*8B ****
*70*2147 *71*MVNV *74*8I *75*8R *76*4R ****
*70*2148 *71*WNV *72*1B *73*1B *74*1 IR *75*1B *76*4R ****
*70*2149 *71*XNV *73*1R *76*4R ****
*70*2150 *71*XXNV *74*8I *76*4B ****
*70*2151 *71*ZNV *72*14 IR *73*7R *74*4I *75*4R *76*29 B *77*9I *78*8R ****
*70*2152 *71*GPV *72*1B *74*1I *76*4B *77*1I *78*1B ****
*70*2153 *71*OPV *72*19 R, 20 R *74*3R *75*3R *76*21 R *77*15 B, 1 R *78*12 B **
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*70*2154 *71*RPV *72*1I *73*1R *74*1I *76*4R *77*1 IR *78*1R ****
*70*2155 *71*OVPV *74*9B ****
*70*2156 *71*SPV *72*1 IR *73*1R *76*4R *77*1I *78*1R ****
*70*2157 *71*XPV *72*1R *74*1I ****
*70*2158 *71*CRV *72*1B *74*1B *77*1I *78*1R ****
*70*2159 *71*DRV *72*10 R *74*2I ****
*70*2160 *71*CRV *72*12 B *73*6R ****
*70*2161 *71*SRV *74*1I *75*1R *76*4R *77*1I *78*1B ****
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*70*2162 *71*RVRV *74*8I *75*8R *76*4R ****
*70*2163 *71*WRV *72*1R *73*1R *74*1R *76*4R *77*1R ****
*70*2164 *71*XRV *72*1R *73*1R *74*1 IR *75*1R *76*4R *77*1I *78*1R ****
*70*2165 *71*CTV *72*1 IR *74*1R *76*4R *77*1I ****
*70*2166 *71*DTV *72*10 I *73*4R *74*2I *75*2R *76*30 R****
*70*2167 *71*OTV *72* 12 I *73*6R *77*8I R *78*7R ****
*70*2169 *71*SVTV *74*8R *75*8R *76*4R ****
*70*2170 *71*XTV *72*1R *77*1I ****
*70*2171 *71*WVWV *74*8R *75*8R ****
*70*2172 *71*AXV *72*1I *73*1R *74*1I *75*1R *76*4R ****
*70*2173 *71*CXV *72*4R *73*1R *76*4R *77*1 IR ****
*70*2174 *71*GXV *72*1R *76*4R *77*1 IR ****
*70*2175*71*JXV*72*1 I, 3 I*73*1 R*76*4 R*77*1 I*78*1 R****
*70*2176 *71*MXV *72*1I *73*1R *74*1I ****
*70*2177 *71*RXV *72*15 R *75*1R *76*4R ****
*70*2178 *71*SXV *72*1I *73*1R *74*1I *75*1R *76*4R *77*1R *78*1R ****
*70*2179 *71*XVXV *74*8R *76*4R ****
*70*2180 *71*XXV *72*19 IR, 1R *73*11 R, 1R *75*7R *76*4R *77*14 I *78*12R****
*70*2181 *71*ZZV *74*4R ****
*70*2187 *71*AAW *72*2C I *74*1R *75*1R ****
*70*2188 *71*DAW *74*2I *75*2R ****
*70*2189 *71*LAW *72*1R *74*1I *75*1R *76*1R *77*1 IR *78*1R ****
*70*2190 *71*ÇAW *74*1I ****
*70*2191 *71*RAW *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2192 *71*UAW *72*1R *73*1R *74*1I *75*1R *76*1R *77*1R *78*1R ****
*70*2193 *71*OVAW *76*19 R ****
*70*2194 *71*XAW *72*1I *73*1R *74*1I *75*1R ****
*70*2195 *71*CCW *72*20 IR, 1 IR *73*1R *74*1I *75*1R *77*1R ****
*70*2196 *71*DCW *72*1C R ****
*70*2197 *71*GCW *72*1I *73*1R *74*1R *76*1R *77*1I *78*1R ****
*70*2198 *71*MCW *72*1 IR *73*1R *74*1 IR *75*1R*76*1R *77*1R *78*1R ****
*70*2199 *71*XCW *72*1R *73*1R *74*1I *76*1R *77*1I *78*1R ****
*70*2200 *71*YCW *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2201 *71*DDW *72*10 R *73*4R *74*2 IR *76*7R *78*5R ****
*70*2202 *71*LDW *72*1R *73*1R *74*1I *76*1R *77*1I *78*1R ****
*70*2203 *71*DEW *72*1C R *73*4R *74*2 IR *75*2R *76*7R *77*5I *78*5R ****
*70*2204 *71*HEW *72*15 R ****
*70*2205 *71*MEW *72*15 R *74*5 I,6I*75*5R *76*10R,12R*77*10I, 11 I*78*9R****
*70*2206 *71*CEW *74*5I *76*11 R ****
*70*2207 *71*OEW *74*3I *75*3R ****
*70*2208 *71*SEW *77*11 I *78*9R ****
*70*2209 *71*UEW *72*15 R *77*10 I ****
*70*2210 *71*UEW *72*1R *73*1R *74*1I *75*1R *76*1R ****
*70*2211 *71*CWEW *74*8I *75*8R ****
*70*2212 *71*EWEW *74*8I *75*8R ****
*70*2213 *71*XEW *72*15 R *77*11 I ****
*70*2214 *71*YEW *72*15 R *77*11 R *78*9R ****
*70*2215 *71*FFW *74*1I *75*1R ****
*70*2216 *71*AHW *77*1R *78*1R ****
*70*2217 *71*DHW *72*10 R *73*4R ****
*70*2218 *71*EHW *72*19 R *73*12 R *74*1R *76*10 R ****
*70*2219 *71*LHW *72*1I *73*1R *74*1I *75*1R *76*1R *77*1R *78*1R ****
*70*2220 *71*BLHW *74*8I *75*8R ****
*70*2221 *71*MHW *72*1I *73*1R *74*1I *75*1R ****
*70*2222 *71*OHW *72*13 R *76*8R *77*8I *78*7R ****
*70*2223 *71*RHW *72*1I *73*1R *74*1I *75*1R *76*1R *77*1R ****
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*70*2224 *71*SHW *72*1I *73*1B *74*1I *75*1R *76*1R ****
*70*2225 *71*HWHW *74*8I *75*8R ****
*70*2226 *71*XHW *72*1B *73*1B *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2227 *71*AXHW *74*8I *75*8R ****
*70*2228 *71*BXHW *74*8I *75*8R *76*14 B ****
*70*2229 *71*+IW *72*15 I *77*11 I*78*9B ****
*70*2230 *71*LIW *74*6B *75*6B ****
*70*2231 *71*MIW *74*6I *75*6R *76*1R ****
*70*2232 *71*CIW *74*5I *76*11 B ****
*70*2233 *71*UIW *72*17 R *75*8R ****
*70*2234 *71*UIW *74*6I *75*6B *76*1R ****
*70*2235 *71*YIW *77*11 I *78*9R ****
*70*2236 *71*CBIW *74*8B ****
*70*2237 *71*CLW *77*1I *78*1R ****
*70*2238 *71*DLW *72*10 I *73*4B *74*2R *77*5I *78*5R ****
*70*2239 *71*GLW *72*1R *73*1R *74*1 IR *75*1B *76*1R *77*1R *78*1R ****
*70*2240 *71*HLW *72*1I *73*1B *76*1R *77*1I *78*1R ****
*70*2241 *71*XHLW *74*8I *75*8B ****
*70*2242 *71*LLW *72*20 R *73*11 R *74*1I *75*1R *76*1B *77*14 I, 15 I *78*12R *
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*70*2243 *71*CNLW *74*8B *75*8R ****
*70*2244 *71*OLW *74*3R *75*3R ****
*70*2245 *71*CLW *74*1I *75*1B *76*1R ****
*70*2246 *71*RLW *72*1I *73*1R *74*1I *75*1R *76*1R, 6B *77*1I ****
*70*2247 *71*SLW *72*1I *73*1B *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2248 *71*LWLW *74*8 IR *75*8R *76*14 R ****
*70*2249 *71*YLW *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2250 *71*FNW *73*1B ****
*70*2251 *71*GNW *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2252 *71*HNW *72*1B *73*1B *74*1I *75*1R *76*1R ****
*70*2253 *71*LNW *72*2R *77*1I ****
*70*2254 *71*CNW *74*1B *75*1B *76*1B ****
*70*2255 *71*RNW *72*1R *73*1R ****
*70*2256 *71*UNW *72*1I *73*1B *74*1I *75*1R *76*1R *77*1 IR *78*1R ****
*70*2257 *71*OVNW *74*9R *75*9R ****
*70*2258 *71*XNW *72*1I *73*1B *75*1R *76*1R ****
*70*2259 *71*YNW *73*1B ****
*70*2260 *71*+PW *74*1 IR *75*1R *76*1R *77*1I *78*1R ****
*70*2261 *71*APW *72*1I *73*1B *74*1I *75*1R *76*1R *77*1R ****
*70*2262 *71*QCPW *74*8R *75*8R *76*14 R ****
70*02262*71*DPW*72*10 I*73*4 B*77*5 I*78*5 R****
*70*2263 *71*GPW *74*1I *75*1R *76*1R ****
*70*2264 *71*HPW *76*1B *77*1I *78*1R ****
*70*2265 *71*XHPW *74*8I *75*8R *76*14 R ****
*70*2266 *71*MPW *74*1B *75*1B ****
*70*2267 *71*OPW *74*3I *75*3R *76*8B ****
*70*2268 *71*QPW *72*1I *73*1R *77*1I *78*1R ****
*70*2269 *71*UPW *74*1I *75*1B ****
*70*2270 *71*XZPW *74*8I *75*8R *76*14R ****
*70*2271 *71*CQW *74*1B *75*1B *76*1R ****
*70*2272 *71*MQW *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1B ****
*70*2273 *71*CQW *72*1B *73*1B *74*7I ****
*70*2274 *71*XQW *74*1I *75*1R *76*1R ****
*70*2275 *71*DRW *75*2B ****
*70*2276 *71*RWRW *74*8 IR *75*8R *76*14 B ****
*70*2277 *71*XBW *72*1B *74*1I *75*1R *76*1R ****
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*70*2278 *71**TW *72*1R *73*1R *74*1R *75*1R *76*1R *77*5I *78*1R ****
*70*2279 *71*CTW *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*2280 *71*DTW *73*4R *74*2I *75*2R *77*5I *78*5R ****
*70*2281 *71*GTW *72*1I *73*1R *74*1I *75*1R *76*2R ****
*70*2282 *71*LTW *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2283 *71*LLTW *74*8R *75*8R ****
*70*2284 *71*QTW *72*1 IR *73*1R *74*1 IR *76*1R *77*1I *78*1R ****
*70*2285 *71*UTW *72*1 IR *73*1R *74*1 IR *76*1R *77*1I *78*1R ****
*70*2286 *71*YTW *72*1R *73*1R ****
*70*2287 *71*AVW *72*1I *73*1R *74*1I *75*1R *77*1I *78*1R ****
*70*2288 *71*DVW *72*1C R *73*4R *74*2I *75*2R *77*5I *78*5R ****
*70*2289 *71*CVW *76*8R *77*8I *78*7R ****
*70*2290 *71*RVW *72*1I *73*1R *74*1I *75*1R *77*1I ****
*70*2291 *71*SVW *72*1R *73*1R *76*1R *77*1I *78*1R ****
*70*2292 *71*UVW *72*19 I, 1I *73*1R *74*7I, 1I *75*1R *76*1R *77*14 I ****
*70*2293 *71*XVW *72*2 IR, 1IR *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2294*71**XW*72*1 I R*73*1 R *75*1 R*76*1 R*77*1 I*78*1 R****
*70*2295 *71*AXW *72*2R *73*1R *74*1 IR *75*1R *76*1R *77*1I *78*1R ****
*70*2296 *71*CXW *74*1I *75*1R *76*1R ****
*70*2297 *71*MCXW *74*8I *75*8R ****
*70*2298 *71*QCXW *74*8R *75*8R ****
*70*2299 *71*DXW *72*1C IR *73*4R *74*2I *75*2R *77*5I *78*5R ****
*70*2300 *71*LPXW *74*8I *75*8R *76*14 R ****
*70*2301 *71*GXW *72*1 IR *73*1R *75*1R *76*1R *77*1 IR *78*1R ****
*70*2302 *71*HHXW *74*8I *75*8R ****
*70*2303 *71*MHXW *74*8I *75*8R ****
*70*2304 *71*QHXW *74*8I *75*8R ****
*70*2305 *71*RHXW *74*8R *76*14 R ****
*70*2306 *71*SHXW *74*8R ****
*70*2307 *71*OIXW *74*9R *75*9R ****
*70*2308 *71*MXW *72*1 IR *73*1R *74*1R *76*1R *77*1I *78*1R ****
*70*2309 *71*OXW *72*12 R *73*6R *74*3R *76*8R *77*8IR *78*7R ****
*70*2310 *71*QPXW *74*8R *75*8R ****
*70*2311 *71*QXW *72*1R *73*1R *74*1I *77*1R *78*1R ****
*70*2312 *71*MQXW *74*8I *75*8R *76*14 R ****
*70*2313 *71*BXW *72*1I *73*1R *74*1I *75*1R *76*1R *77*1R *78*1R ****
*70*2314 *71*UXW *72*1I *73*1R *74*1R *75*1R *77*1I *78*1R ****
*70*2315 *71*SVXW *74*8I *75*8R *76* 14 R ****
*70*2316 *71*SWXW *74*8I *75*8R ****
*70*2317 *71*XWXW *74*8 IR *75*8R *76*14 R ****
*70*2318 *71*YWXW *74*8 IR *76*14 R ****
*70*2319 *71*XXW *72*19 R *74*1I, 7R *75*1R *76*1R *77*14 I *78*12 R ****
*70*2320 *71*YXW *72*1R *73*1R *74*1R *75*1R *76*1R *77*1I *78*1R ****
*70*2322 *71*AYW *72*1R *73*1R *74*1I *77*1R *78*1R ****
*70*2323 *71*DYW *72*10 R *73*4R *74*2IR *76*7R *77*5 IR *78*5R ****
    *70*2324 *71*GYW *72*1R *73*1R *77*1I *78*1R ****
*70*2325 *71*HYW *72*1R *73*1R *74*1I *75*1R *76*1R *77*1R *78*1R ****
*70*2326 *71*YWYW *74*8 IR *75*8R *76*14 R ****
*70*2327 *71*YWYW *75*8R ****
*70*2328 *71*XYW *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2329 *71*YYW *72*19 I, 1I *74*7I *75*1R *76*13 R *78*1R ****
*70*2330 *71*ZYW *72*14 R *74*4R *75*4R *76*9R ****
*70*2331 *71*CWCW *74*8R ****
*70*2332 *71*CEW *74*5R *75*5R ****
*70*2333 *71*HIW *74*6I ****
*70*2334 *71*STXW *74*8R *75*8R ****
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*70*2338 *71*AAX *72*19 R, 28 R *74*1I *75*1R *77*1I ****
*70*2339 *71*BAX *72*1R *73*1R ****
*70*2340 *71*CAX *72*1I *73*1R *77*1I ****
*70*2341 *71*DAX *72*42 R *74*2I *75*2R *76*7R *77*5I ****
*70*2342 *71*JAX *72*1R *74*1I *77*1I *78*1R ****
*70*2243 *71*BAX *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2344 *71*UAX *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2345 *71*WAX *72*1R *76*1R ****
*70*2346 *71*AXAX *74*8I *75*8R *76*14 R ****
*70*2347 *71*ABX *74*1R *75*1R ****
*70*2348 *71*EBX *72*1R *75*1R ****
*70*2349 *71*FBX *72*1R *73*1R *74*1R *75*1R *76*1R *77*1I *78*1R ****
*70*2350 *71*LBX *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2351 *71*MBX *72*1I *73*1R *74*1I *77*1I *78*1R ****
*70*2352 *71*CBX *72*12 R *73*6R *74*3R *76*8R ****
*70*2353 *71*RBX *72*1 IR *73*1R *75*1R *77*1 IR *78*1R ****
*70*2354 *71*YBX *72*1R *73*1R *74*1I *76*1R *77*1R *78*1R ****
*70*2355 *71*CCX *72*19 I, 1I *74*1I *75*1R *76*1R *77*14 I ****
*70*2356 *71*DCX *72*1C I *73*4R *74*2I *75*2R *77*5I *78*7R ****
*70*2357 *71*MCX *72*37 R *73*1R *77*1I *78*1R ****
*70*2358 *71*RCX *77*1R ****
*70*2359 *71*SCX *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2360 *71*ADX *72*1R *76*1R *77*1I *78*1R ****
*70*2361 *71*DDX *72*10 R *73*4R *77*5I ****
*70*2362 *71*HDX *72*1R *74*1I *75*1R *76*1R *77*1 IR *78*1R ****
*70*2363 *71*CDX *77*8I *78*7R ****
*70*2364 *71*CEX *72*15 R *77*11 I ****
*70*2365 *71*DEX *72*1C R *74*2 IR *75*2R *76*7R *77*5I *78*5R ****
*70*2366 *71*GEX *72*1R *73*1R *74*1I *75*1R *76*1R *77*1 IR *78*1R ****
*70*2367 *71*GEX *77*11 R *78*9R ****
*70*2368 *71*MEX *72*15 R *73*8R *74*5I *75*5R *76*1C R *77*1C I, 11 I *78*9R **
**
*70*2369 *71*REX *73*8R *74*5R *75*5R *76*10 R *77*11 R ****
*70*2370 *71*SEX *74*8 IR *76*10 R ****
*70*2371 *71*UEX *72*15 R *74*5R *76*10 R *77*10 I *78*9R ****
*70*2372 *71*UEX *74*1R *75*1R *76*1R ****
*70*2373 *71*CWEX *74*5I *75*     *76*1C R ****
*70*2374 *71*YEX *72*15 R *74*5I *76*10R ****
*70*2375 *71*DFX *72*10 IR *73*4R *74*2I *77*5R ****
*70*2376 *71*GFX *72*1R ****
*70*2377 *71*MFX *72*1 IR ****
*70*2378 *71*OFX *76*11 R ****
*70*2379 *71*WFX *74*1I *75*1R *76*1R ****
*70*2380 *71*AGX *72*1R *73*1R *76*1R *77*1I *78*1R ****
*70*2381 *71*MGX *72*1I *74*1R *75*1R *76*1R *77*1I ****
*70*2382 *71*OGX *74*3R *76*8R ****
*70*2383 *71*SGX *72*1R *74*1R *76*1R *77*1I *78*1R ****
*70*2384 *71*UGX *72*1 IR *73*1R *74*1R *75*1R *76*1R *77*1R *78*1R ****
*70*2385 *71*WGX *72*1R ****
*70*2386 *71*GXGX *74*8I *76*14 R ****
*70*2387 *71*YGX *72*1 IR *74*1R *75*1R *76*1R *77*1I *78*1R ****
*70*2388 *71*AHX *72*1R *73*1R *74*1I *75*1R *76*1R *77*1 IR *78*1R ****
*70*2389 *71*DHX *72*1C I *77*5I *78*5R ****
*70*2390 *71*BHX *74*1R *76*1R *77*1I *78*1R ****
*70*2391 *71*OHX *72*13 I *73*6R *74*3I *78*7R ****
*70*2392 *71*BHX *72*1R *77*1R *78*1R ****
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*70*2393 *71*YTHX *74*8R *75*8R *76*14 R ****
*70*2394 *71*YHX *74*1I *75*1R *76*1R ****
*70*2395 *71*AIX *72*17 IR *77*10 IR, 11 IR ****
*70*2396 *71*CIX*72*17 R ****
*70*2397 *71*GIX *77*11 I ****
*70*2398 *71*WIX *73*8R, 10 R *74*6I *77*10I, 11 I *78*9R ****
*70*2399 *71*XIX *72*17 R *77*11 R ****
*70*2400 *71*YIX *72*17 R *74*5I *75*5R *76*10 R ****
*70*2401 *71*AKX *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I*78*1R ****
*70*2402 *71*FKX *74*1I *75*1R *76*1R ****
*70*2403 *71*JKX *72*20 R *74*1I *75*1R *76*1R *77*14 I, 1I *78*12R, 1R ****
*70*2404 *71*LKX *72*1R *74*1R *75*1R *77*1R ****
*70*2405 *71*OKX *73*6R *74*3I *77*8I *78*7R ****
*70*2406 *71*ÇKX *72*1I *73*1R *74*1I *75*1R *77*1I *78*1R ****
*70*2407 *71*JXKX *74*8I *75*8R *76*14 R ****
*70*2408 *71*YKX *72*1I *73*1R *77*1I *78*1R ****
*70*2409 *71*DNX *72*10 I *74*2I *75*2R *76*7R ****
*70*2410 *71*FNX *72*1R *73*1R*74*1I *75*1R *76*1R *77*1R *78*1R ****
*70*2411 *71*GNX *74*1R *75*1R ****
*70*2412 *71*MNX *72*19 I *73*12R *74*1R *75*1R ****
*70*2413 *71*ÇNX *72*1 IR *73*1R *74*1I *75*1R ****
*70*2414*71*UNX *72*1R *73*1R ****
*70*2415 *71*LWNX *74*8R *75*8R ****
*70*2416 *71*YNX *72*1R *73*1R *77*1I ****
*70*2417 *71*DPX *72*10 R ****
*70*2418 *71*OPX *72*19R *74*3I *75*3R *76*11R*77*8 IR ****
*70*2419 *71*CQX *74*3I *75*3R *76*8R *77*8I ****
*70*2420 *71*QQX *72*19 I *74*1I *75*1R *76*13R, 1R *77*1I *78*1R ****
*70*2421 *71*WQX *74*1I *75*1R*76*1R ****
*70*2422 *71*ARX *72*1R *74*1I *76*1R *77*1I *78*1R ****
*70*2423 *71*CRX *72*1R *73*1R *74*1I *76*1R *77*1IR *78*1R ****
*70*2424 *71*DRX *72*10 IR *74*2I *76*7R *77*5I ****
*70*2425 *71*FRX *72*1R ****
*70*2426 *71*LRX *72*1R *73*1R *76*1R *77*1I *78*1R ****
*70*2427 *71*MRX *72*1R *76*1R *77*1I *78*1R ****
*70*2428 *71*CPRX *74*9I *75*9R *76*19 R ****
*70*2429 *71*RRX *72*20 IR *73*12 R *74*7I, 1I *75*7R, 1R *76*13 R *77*14 IR *78
*12 R ****
*70*2430 *71*SRX *72*1R *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2431 *71*URX *72*1I *73*1R *74*1I *77*1R ****
*70*2432 *71*RXRX *74*8I *75*8R *76*14 R ****
*70*2433 *71*YRX *72*1R *73*1R *74*1I *76*1R *77*1I *78*1R ****
*70*2434 *71*+TX *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*2435 *71*CTX *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*2436 *71*DTX *72*10 IR *73*4R *74*2I *75*2R ****
*70*2437 *71*DTX *76*7R *77*5I *78*5R ****
*70*2438 *71*HTX *74*1I *75*1R *76*1R ****
*70*2439 *71*ÇTX *72*1I *73*1R *74*1R *75*1R *76*1R ****
*70*2440 *71*CQTX *74*8I *75*8R ****
*70*2441 *71*STX *72*1R *73*1R*74*7 IR, 1I R*75*7R, 1R *76*13R *77*1I ****
*70*2442 *71*WTX *74*1I *75*1R *76*1R ****
*70*2443 *71*SXTX *74*8 IR *75*8R *76*14 R ****
*70*2444 *71*YTX *72*1I *73*1R *77*1R ****
*70*2445 *71*YTX *72*1R *74*1I *75*1R *76*1R *77*1I ****
*70*2446 *71*CVX *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*2447 *71*DVX *72*10I *73*4R *74*2I *75*2R *76*7R *77*5I *78*5R ****
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*70*2448 *71*GVX *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*2449 *71*MVX *72*1R *73*1R *76*1R ****
*70*2450 *71*OVX *76*8R *77*8 IR *78*7R ****
*70*2451 *71*RVX *72*1I *73*1R *74*1R *75*1R *76*1R ****
*70*2452 *71*SVX *72*1I *73*1R *74*1I *75*1R *76*1R ****
*70*2453 *71*UVX *72*19 I, 1I *73*12R, 1R *74*7I, 1I *75*1R *76*13 R *77*14 I *7
8*12 R ****
*70*2454 *71*UXVX *74*8R *76*14 R ****
*70*2455 *71*AWX *72*1R *73*1R *74*1I *76*1R *77*1IR *78*1R ****
*70*2456 *71*CWX *72*1R *74*1 IR *75*1R *76*1R *77*1I *78*1R ****
*70*2457 *71*GWX *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*2458 *71*MWX *72*1I *73*1R *74*1I*75*1R *76*1R *77*1I ****
*70*2459 *71*OWX *74*3I *75*3R *76*8R ****
*70*2460 *71*RWX *72*1 IR *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2461 *71*WWX *72*19 I, 1I *74*1I *76* 1R *77*14 I ****
*70*2462 *71*DYX *73*4R *74*1R *77*5I *78*5R ****
*70*2463 *71*CLYX *74*9R *75*9R *76*19 R ****
*70*2464 *71*MYX *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I *78*1R ****
*70*2465 *71*RYX *72*1R *75*1R *76*1R *77*1I*78*1R ****
*70*2466 *71*SYX *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*2467 *71*YXYX *74*8R *75*8R *76*14 R ****
*70*2468 *71*YYX *74*7I, 1I *75*1R *76*1R ****
*70*2469 *71*ZYX *74*4I *75*5R *77*9I ****
*70*2470 *71*DZX *74*3R *77*5R ****
*70*2471 *71*GZX *72*1R *73*1R *74*1I *75*1R *76*1R *77*1 IR *78*1R ****
*70*2472 *71*JZX *74*1I *75*1R *76*1R ****
*70*2473 *71*MZX *72*1I *73*1R *76*1R ****
*70*2474 *71*RZX *73*1R *76*1R *77*1I *78*1R ****
*70*2475 *71*SZX *74*1I *75*1R ****
*70*2476 *71*WZX *72*1I *73*1R *74*1I *75*1R *76*1R *77*1I ****
*70*2477 *71*ZZX *72*14 R *73*7R *74*4R *77*9R ****
*70*2485 *71*A+Y *72*1I *73*1R *74*1I *76*5R *77*1I *78*1R ****
*70*2486 *71*B+Y *72*1R *76*5R ****
*70*2487 *71*D+Y *72*10 R *73*4R *76*31 R *77*5I ****
*70*2488 *71*H+Y *72*1 IR ****
*70*2489 *71*L+Y *72*1I *73*1R *74*1I *75*1R *77*1I *78*1R ****
*70*2490 *71*O+Y *72*12R ****
*70*2491 *71*OP+Y *72*2R *74*9I *75*9R *76*37 R ****
*70*2492 *71*S+Y *72*1 IR *73*1R *74*1R *75*1R *76*5R ****
*70*2493 *71*X+Y *74*1I *75*1R ****
*70*2494 *71*X+Y *72*1R *73*1R *74*1R *75*1R *76*5R *77*1I *78*1R ****
*70*2495 *71*AAY *74*7I, 1I *75*1R *76*5R *77*1R ****
*70*2496 *71*DAY *72*10I *73*4R *77*5I ****
*70*2497 *71*GAY *72*1R *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*2498 *71*HAY *72*1 IR *73*1R ****
*70*2499 *71*LAY*74*1I *76*5R *77*1I ****
*70*2500 *71*LLAY *74*8R *75*8R ****
*70*2501 *71*RAY *72*2R *74*1I *75*1R *76*5R *77*1I ****
*70*2502 *71*RAY *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*2503 *71*UAY *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*2504 *71*WAY *72*1 I *73*1R ****
*70*2505 *71*XAY *72*1R *74*1I ****
*70*2506 *71*XAY *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*2507 *71*YAY *74*1I *75*1R *76*5R ****
*70*2508 *71*AYAY *74*8R *75*8R ****
*70*2509 *71*ZAY *72*14 R *73*7R *77*9I *78*8R ****
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*70*2510 *71*+BY *72*1R *77*1I ****
*70*2511 *71*ABY *72*1R *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*2512 *71*RBY *72*19 R, 1R ****
*70*2513 *71*DBY *72*1C R *77*5I ****
*70*2514 *71*DBY *72*10 R *77*5I ****
*70*2515 *71*GBY *77*1R *78*1R ****
*70*2516 *71*LBY *72*1I *73*1R *74*1R *75*1R *77*1I ****
*70*2517 *71*MBY *74*1I *75*1R *76*5R ****
*70*2518 *71*RBY *74*1I *75*1R *76*5R ****
*70*2519 *71*XBY *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*2520 *71*YBY *72*1R *74*1I *75*1R *76*5R ****
*70*2521 *71*BYBY *74*8R *75*8R *76*17 R ****
*70*2522 *71*CCY *74*1I *75*1R ****
*70*2523 *71*CCY *72*1 R, 19 I      *73*11 R, 1R *74*7I, 1I *75*1R *77*14 R, 1R
*78*12 R, 1R ****
*70*2524 *71*DCY *76*31 R ****
*70*2525 *71*JCY *74*1I *75*1R *76*5R *77*1I ****
*70*2526 *71*LCY *74*1I *75*1R *76*5R ****
*70*2527 *71*SCY *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I ****
*70*2528 *71*XCY *72*1I *73*1R *74*1I *75*1R *76*5R ****
*70*2529 *71*DDY *72*1C R *74*2I *76*31 R *77*5I *78*5R ****
*70*2530 *71*WDY *74*1R *76*5R ****
*70*2531 *71*AEY *72*15 IR *74*5I *75*5R *76*26 R *77*1CI, 11 I *78*9R ****
*70*2532 *71*BEY *73*8R ****
*70*2533 *71*CEY *72*15 I ****
*70*2534 *71*DEY *72*1C R *73*4R *74*2I *75*2R *76*31 R *77*5I *78*5R ****
*70*2535 *71*GEY *72*15 R ****
*70*2536 *71*GEY *72*15 R *76*18 R ****
*70*2537 *71*HEY *72*15 R ****
*70*2538 *71*HEY *72*15 R *74*5R *76*10 R, 29 R ****
*70*2539 *71*JEY *72*15 I *74*5I ****
*70*2540 *71*MEY *72*15 I *73*8R, 10R ****
*70*2541 *71*REY *72*15 R *77*11 R ****
*70*2542 *71*REY *74*1R *76*5R ****
*70*2543 *71*SEY *72*15 IR *73*8 R, 1C R *76*26 R ****
*70*2544 *71*WEY *74*5 I *76*26 R *77*11 I *78*9R ****
*70*2545 *71*WEY *74*1I *75*1R *76*5R ****
*70*2546 *71*XEY *72*15 R *77*11 I ****
*70*2547 *71*XEY *72*15 I *74*5I ****
*70*2548 *71*XEY *74*1R ****
*70*2549 *71*SFY *72*1I *73*1R *75*1R *76*5R *77*1I ****
*70*2550 *71*XFY *72*1I *73*1R *75*1I *76*5R *77*1R *78*1R ****
*70*2551 *71*CGY *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I ****
*70*2552 *71*DGY *72*1C R *77*5I *78*5R ****
*70*2553 *71*DGY *72*10 R *76*31 R *77*5I ****
*70*2554 *71*FGY *72*1I *73*1R *76*5R *77*1I *78*1R ****
*70*2555 *71*XFGY *74*8R *75*8R ****
*70*2556 *71*GGY *72*2C R *73*11 R *76*18 R *77*14 I, 1R *78*12 R ****
*70*2557 *71*HGY *72*1I *73*1R ****
*70*2558 *71*HGY *72*1I *73*1R *74*1I *75*1R *77*1I ****
*70*2559 *71*LGY *72*1I *73*1R *74*1I *76*5R *77*1 IR *78*1R ****
*70*2560 *71*WLGY *74*8R *75*8R *76*17 R ****
*70*2561 *71*MGY *76*5R *77*1 IR *78*1R ****
*70*2562 *71*CGY *74*3I *76*17R*77*8I *78*7R ****
*70*2563 *71*SGY *73*1R *74*1I *75*1R *76*5R ****
*70*2564 *71*UGY *72*1R *73*1R *74*1R *76*5R ****
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*70*2565 *71*OVGY *74*9R *75*9R ****
*70*2566 *71*WGY *72*1R *74*1R *75*1R *77*1 IR ****
*70*2567 *71*WGY *72*1I *73*1R *74*1I *75*1R *76 *5R *77*1I *78*1R ****
*70*2568 *71*OWGY *74*9R *75*9R ****
*70*2569  71*XGY *72*1 IR *73*1R *74*1I *76*5R *77*1 IR *78*1R ****
*70*2570 *71*XXGY *74*8I *75*8R *76*17 R ****
*70*2571 *71*ZGY *73*7R *74*4I *77*9I *78*8R ****
*70*2572 *71*DHY *72*1C R *73*4R *77*5R ****
*70*2573 *71*DHY *72*10 R *73*4R *74*2I *76*31 R *77*5I ****
*70*2574 *71*GHY *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70*2575 *71*MHY *72*1I *73*1R *77*1R *78*1R ****
*70*2576 *71*OHY *72*12 I *77*8I *78*7R ****
*70*2577 *71*SHY *72*1I *73*1R *74*1I *75*1R *76*5R *77*1I *78*1R ****
*70* 1 *71* AA+ *77* 1 IR ****
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Nominals

The noun reference dictionary was constructed in accordance with the plan outlined previously in Chapter IV, pp. 46-52. It will be noted that the standard page of both sections of the dictionary, the pure nominal and the verb root-nominal sections, faithfully follow this plan. Also, a legend of the various symbols has been added.

Legend of Symbols--Standard Page

W - Exclamatory remarks
TZ - Adverbs
Z - Adjectives
IN - Prepositions
ZX - Acrostical Abbreviations
BN - Pronouns
V - Abbreviations
FZ - Adjective Masculine
GN - Conjunction
YN -Interrogatories
NY - Numbers
FN - Dual Numbers
+E - Variant plena waw
+I - Variant plena yud
2, 3, 4 - Position of waw or yud in word, e.g. שלחן +E2
CF - Compound Forms
INDN--Indeclinable nominals
MSP - Indeclinable forms of masculine singular or /and plural

FSP - Indiclinable forms of feminine, singular or/and plural

BKLM - Not governed by the prefixes ב,כ,ל,מ

H - ה Not governed by this prefix

W - ו Not governed by this prefix

S. - ש Not governed by this prefix

D - ד Not governed by this prefix

1 - Affirmation with respect to inquiry

0 or Blank - Negation with respect to inquiry

Legend of Symbols--Computer Annotations

00 - Beginning of a new list of information

**** - End of all information for one unit set

01 - The verb root of a nominal

02 - Entry

02 - Variant spelling

02 - Special plural form (if any)

03 - Construction (0, A, B, C, D, E. F); The original construction of the given entry

04 - Class

05 - Compound forms

06 - Part of Speech

07 - Indeclinability of Masculine singular form

08 - Indeclinability of masculine plural form

09- Indeclinability of female singular form

10- Indeclinability of female plural form

11-Special masculine plural form

12- Special female plural form

13- Prefix (A1) ב

14- Prefix (A2) כ

15- Prefix (A3) ל

16- Prefix (A4) מ

17- Prefix (B1) ה

18- Prefix (B2) ו

19- Prefix (B3) ש

20- Prefix (B4) ד

21- Philological Source

N (Biblical)
A (Middle Ages)
Z (Talmud)
G (Modern)
⊕ (Aramaic)
R (Arabic)
I (Hellenic)

g. **Results**:

The techniques employed led to the compilation of a noun dictionary, to the construction of a special verb list, and to the confirmation of the reliability of the application of the empirical rules, (vid Final Report, February, 1968, page 36) to the fractionations resulting from data analysis.

h. **Discussion**:

The results generally conformed satisfactorilly to the expectations outlined at the outset of the project. A major problem resulted, however, with regard to the final stage of the programming. The incorporation of the grammatical aspects governing the data into the original program evenuated into a continual and burdensome dependency upon a programmer.

Conclusions **by Dr. Phil Smith, Jr., Director of Project**

The work of the past year has revealed two serious difficulties, and the experience may be valuable for the future.

Firstly, the programming method adopted bound the facts of Hebrew closely up with the actual programs. This meant that as more was learned about the logic of computer analysis of Hebrew morphology, it also became necessary to change the actual programs. This in turn meant that Rabbi Lazewnik was eternally dependent on the availability of a programmer, one who knew intimately the details of the programs already written and who had some understanding of the nature of the Hebrew-language problems being encountered. Because of the general shortage of programmers, and particularly the paucity of programmers with the special knowledge required, the project was eternally at the mercy of student programmers who were willing to work during the summer vacation, or a few hours a week during the school year, and who then, for understandable personal reasons, left the project. This is not to criticize the programmers themselves: much clever and devoted work was done by the dedicated young men who participated in the project. But they could not be expected to remain on the project for the half-dozen years which it would have required.

The solution to this inherent difficulty would seem to be to divorse the analysis programs from the facts of Hebrew -- to provide the scholar (Rabbi Lazewnik) with a generalized computer routine which would match input data against a stored dictionary, yielding results which depend only indirectly on the programming but directly on the content and organization of the Hebrew dictionary. Thus one can think of the present system, the object of this report, as consisting of two elements: the data (the text to be analyzed) and the program-cum-data. As the data prove to be inadequate to a newly arisen problem, it is necessary for a skilled programmer to change the program, or to add to it. In the divorced system there would be three elements: the data (the text to be analyzed), the "dictionary", and the program. The program would be a sealed package, a "black box", which would apply the dictionary to the data, according to elaborate but fixed rules. This program, once written and perfected, would be free from the need for further attention by a programmer. The "dictionary" would be the product of the linguistic researcher, in this case of Rabbi Lazewnik. This dictionary would be a rather special one, being constructed according to the logical demands of the program. Indeed, the development of such a dictionary would in itself be very much like programming, though on a special level.

This report is not the place to propose the construction of such a dictionary-lookup program; our point here is merely to emphasize one of the difficulties of the present approach, and a possible solution. The idea of a dictionary-lookup program which is separate from the dictionary and in fact dictates the form of the dictionary is itself not new: it is directly patterned after the various "Translators" which IBM has built experimentally in the past decade. And there have undoubtedly been other dictionary-lookup schemes which were quite independent of the language to which they were to be applied. But one of the results of the work of the past year has been to show the need for separating data and program in the morphological-analysis process, and thus to free the researcher from daily dependence on a programmer.

The second difficulty which may turn out to be serious is the problem of homography in written standard Hebrew. Because of the custom of not indicating vowel phonemes in the writing system, the number of homographs is enormously increased over the number of homophones. The situation might be similar in English if we were to write RNG for words like RING, RAND, RUNG, in addition to RENEGE and RANGE. The partial results obtained so far hint that the number of homographs in written Hebrew may be so great that identification of underlying roots may fail in a significant number of instances. One hesitates to make any quantitative guess as to the rate of homograph failure; one can only suggest that it may be high enough so that an index verborum of a Hebrew text, constructed entirely by computer, may prove not very helpful to the scholarly student of that text. On the other hand the very discovery of the degree to which homography pervades written Hebrew will be very interesting linguistically, and perhaps pedagogically.

Recommendations:

In order to overcome the difficulty mentioned in the Discussion, it is recommended that a grammar of special character be devised. This would involve utilization of a program system giving prominence to five elements: 1) the input-data, the text to be analyzed; 2) the intitial program effecting fractionation of data, into stem & affix combinations, checking against defined grammatical tables, and checking results of the latter for legitimacy against empirical rules; 3) a noun dictionary; 4) a specialized grammar; 5) the final program.

j. Summary

The program for analysis of data-input was perfected. The empirical rules previously formulated were incorporated into the program and tested. (See Appendix for list of these rules and application to computer operation).

A noun reference dictionary was compiled in two sections: verbal derivatives, and non-verbal derivatives. There are a total of some 18,000 entries. All parts of speech except verbs were included. The plan previously outlined (Final Report, February, 1968) was followed.

The verb listing and classification, which is part of this report, was compiled. This entailed considerable reorganization and modification in order to meet the special needs of the project. Empirical rules were formulated for the purpose of further enabling computer elimination of non-relevant elements of the residue of stem and affix output. Result of computer operation on input of data drawn from this listing is included in this report.

As the research proceeded it became apparent that homographs were constituting a problem though one solvable. However another problem, a more serious one, was presenting itself in the ever continual dependency upon the services of a programmer. It was therefore decided that it would be necessary to separate the incorporated rules of Hebrew from the logic of the program.

APPENDIX

EMPIRICAL RULES FOR CANCELLATION OF COMBINATIONS [1]

Rule #1 (IF>5): If a stem in a fractionation consists of more than 5 characters, there is no possibility of its being a verb. Thus, the data in the columns 1-21 should be considered void, i.e., The result row of columns 1-21 should be zero.

Rule #2 (IF=5): Exactly 5 characters in a stem may constitute a verb provided the first pair of characters of the stem (right to left) is one of the following: ZY, (שת), HV, (זד), ZQ, (סת) CF, (צט). Otherwise the possibility of being a verb is void, as above Rule 1.

Rule #3 (Passive Participle): Columns 35 and 36 are not valid for a break-up unless it meets the following two conditions:

1. The stem must have 3 or 4 characters.
2. The character before the last (from left) must be E. Otherwise these columns (35, 36) should be zero in the result row zero.

Rule #4 (ZE-D): A break-up with a D as prefix 2 and ZE as suffix 1 is valid with a stem of one or two characters only. If more than two chasacters, the data in the entire result row, columns 1-36 should be considered void, i. e., the entire result row (1-36) is zero.

---

[1] cf. Article by M. Sapiro, Y. Cheouka, "Nituah Mekanografi Šel Hammorfologeya Haʻivrit", Lěšonénu, Vol. 27-28, (June, 1964)

Rule #5 (VG): If the sum grammar of one of the following groups is zero the entire verb part of the table (column 1-21) should be cancelled, i.e., marked zero.

Verb groups

1. 1-7
2. 8-14
3. 15-17
4. 18-19
5. 20-21

Rule #6 (N.G.): If the sum grammar of one of the following groups is zero the entire noun part of the table (column 22-27) should be cancelled, i.e., marked zero.

Noun groups

22-23
24-25
26-27

Rule #7:(PA)If one of the fractions of the break-ups that made up the multiple logical results is of suffix 3 (i.e. that one of the 4 rows of information was of suffix 30 and the results of one of the following groups (Pronominal affixes) is zero the entire break-up should be cancelled, ie., the entire result row 1-36 marked zero.

Pronominal Affixes

28-30
31-32
33-34

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Recordings by the computer

Sample illustration of Grammatical Validation by Computer and Application of Empirical Rules.

```
LAZEWNIK  PHASE 2  JUNE 22,1968

   ZEHEICD                                                ZEHEIC                    D2
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  C  0  1
SUFFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
D2          C  1  0  C  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  1  C  0  0  0  0  0  0  0  1
R1
R3
B5          ----------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  1  1  1  0  1  C  0  0  0  0  0  0  0  0

   ZEHEICD                               ZE             HEICD
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  C  0  0  0  0  0  0  0  1
SUFFIX 1
ZE          0  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  1  0  1  1  1  0  1  1  0  0  0  0  0  0  0  1  1
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1R2
R3
R5          ----------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  C  0  C  0  C  0  0  0  0  1  1  1  0  1  1  0  0  0  0  0  0  0  0  0

   ZEHEICD                               ZE             HEIC           D
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
ZE          C  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  1  0  1  1  1  0  1  1  0  0  0  0  0  0  0  1  1
PREFIX 2
D           1  0  0  1  1  1  1  1  0  0  1  0  1  1  1  1  1  1  1  1  1  0  0  C  0  0  C  1  1  1  1  1  1  1  0  0
PREFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R4
B5R6        ----------------------------------------------------------------------------------------------------------
            0  C  0  C  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  C  0  0  0  C  C  0  0  0  0  0  0  0  0

   ZEHEICD                               ZE             HEIC                        D
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
ZE          0  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  1  0  1  1  1  0  1  1  C  0  0  0  0  0  0  1  1
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
D           1  1  1  C  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
            ----------------------------------------------------------------------------------------------------------
            0  1  0  C  0  0  0  0  1  1  0  1  1  0  1  1  1  1  0  1  0  1  1  1  0  1  1  0  0  0  0  0  0  0  0  1
```

```
LAZEWNIK  PHASE 2  JUNE 22,1968

   ZEHEICD                                   ZE            HEIC                          D2
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
ZE          0  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  1  0  1  1  1  0  1  1  0  0  0  0  0  0  0  1  1
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
D2          0  1  0  0  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  1  0  0  0  0  0  0  0  0  1
            ----------------------------------------------------------------------------------------------------------
            0  1  0  0  0  0  0  0  1  1  0  1  1  0  1  1  1  1  0  1  0  1  1  1  0  0  1  0  0  0  0  0  0  0  0  1

   ZEHEICD                                  Z              EHEICD
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
Z           1  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  1  1  0  0  1  1  1  0  0  0  0  0  0  0  0  0
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R1
R3
R5          ----------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  1  1  1  0  0  0  0  0  0  0  0  0

   ZEHEICD                                  Z              EHEIC          D
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
Z           1  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  1  1  0  0  1  1  1  0  0  0  0  0  0  0  0  0
PREFIX 2
D           1  0  0  1  1  1  1  1  0  0  1  0  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  1  1  1  1  1  1  1  0  0
PREFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1R2
R3
R5R6        ----------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0

   ZEHEICD                                  Z               EHEIC                         D
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
Z           1  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  1  1  0  0  1  1  1  0  0  0  0  0  0  0  0  0
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
D           1  1  1  0  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1R2
R3
R5          ----------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  1  1  1  0  0  0  0  0  0  0  0  0
```

```
LAZEWNIK  PHASE 2  JUNE 22,1968

   ZEHEICD                                   Z              EHEIC                         D2
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  C  0  0  0  0  0  0  0  1
SUFFIX 1
Z           1  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  1  1  0  0  1  1  1  0  0  0  0  0  0  C  0  0
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
D2          0  1  0  C  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  C  1  C  0  0  0  0  0  C  0  1R2
R3
R5          ------------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  C  0  C  0  0  0  0  0  0  1  0  0  1  0  1  0  0  0  0  C  0  0  0  0

     ZELFB                                   ZE             LFE
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
ZE          C  1  0  C  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  1  0  1  1  1  0  1  1  C  0  0  0  0  0  0  1  1
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3          ------------------------------------------------------------------------------------------------------------
            0  1  0  0  1  1  1  0  1  1  0  1  1  C  1  1  1  1  0  1  0  1  1  1  0  1  1  0  0  0  0  C  0  C  0  0

     ZELFB                                   Z              ELFB
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  C  0  0  0  0  0  0  0  1
SUFFIX 1
Z           1  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  1  1  0  0  1  1  1  0  0  0  0  0  0  0  0  0
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3          ------------------------------------------------------------------------------------------------------------
            1  1  0  C  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  0  1  1  0  0  1  1  1  0  0  0  0  0  0  0  0  0

    ZELAGE                                                  ZELAG                         E
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  C  0  0  0  0  0  0  0  1
SUFFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
E           1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1R2
R3
R5          ------------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  C  0  0  0  0  0  0  1  1  1  1  1  1  0  0  0  0  0  0  C  0  0
```

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LAZEWNIK  PHASE 2  JUNE 22,1968

   ZELAGE                             ZE       LAGE
SUFFIX 3
                1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 1
SUFFIX 1
ZE              0 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 1 0 1 1 1 0 1 1 0 0 0 0 0 0 0 1 1
PREFIX 2
                1 1 0 1 1 1 1 0 1 1 0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
PREFIX 1
                1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
R3              -----------------------------------------------------------------------
                0 1 0 0 1 1 1 0 1 1 0 1 1 0 1 1 1 1 0 1 0 1 1 1 0 1 1 0 0 0 0 0 0 0 0 0

   ZELAGE                             ZE       LAG                 E
SUFFIX 3
                1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 1
SUFFIX 1
ZE              0 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 1 0 1 1 1 0 1 1 0 0 0 0 0 0 0 1 1
PREFIX 2
                1 1 0 1 1 1 1 0 1 1 0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
PREFIX 1
E               1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
R3              -----------------------------------------------------------------------
                0 1 0 0 1 1 1 0 1 1 0 1 1 0 1 1 1 1 0 1 0 1 1 1 0 1 1 0 0 0 0 0 0 0 0 0

   ZELAGE                             Z        ELAGE
SUFFIX 3
                1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 1
SUFFIX 1
Z               1 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 1 1 0 0 1 1 1 0 0 0 0 0 0 0 0 0
PREFIX 2
                1 1 0 1 1 1 1 0 1 1 0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
PREFIX 1
                1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1R2
R3
R5              -----------------------------------------------------------------------
                0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 1 1 0 0 0 0 0 0 0 0 0

   ZELAGE                             Z        ELAG                E
SUFFIX 3
                1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 1
SUFFIX 1
Z               1 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 1 1 0 0 1 1 1 0 0 0 0 0 0 0 0 0
PREFIX 2
                1 1 0 1 1 1 1 0 1 1 0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
PREFIX 1
E               1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
R3              -----------------------------------------------------------------------
                1 1 0 0 1 1 1 0 1 1 0 1 1 0 1 1 1 1 1 0 1 1 0 0 1 1 1 0 0 0 0 0 0 0 0 0
```

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LAZEWNIK  PHASE 2  JUNE 22,1968

     DYLYA                              DYLY                A
SUFFIX 3
                        1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 1
SUFFIX 1
                        1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
PREFIX 2
                        1 1 0 1 1 1 1 0 1 1 0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
PREFIX 1
A                       0 0 0 0 1 1 1 1 1 1 0 0 1 1 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
R3
R5                      -----------------------------------------------------------------------
                        0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0

     DYLYA               D                              YLYA
SUFFIX 3
D                       1 1 1 1 1 1 0 1 1 1 0 0 0 0 1 1 1 1 1 1 1 1 1 0 1 1 0 1 0 0 1 0 0 1 1 0
SUFFIX 1
                        1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
PREFIX 2
                        1 1 0 1 1 1 1 0 1 1 0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
PREFIX 1
                        1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
R3                      -----------------------------------------------------------------------
                        1 1 0 1 1 1 0 0 1 1 0 0 0 0 1 1 1 1 1 1 1 1 1 0 1 1 0 1 0 0 1 0 0 1 0 0

     DYLYA                                   D          YLYA
SUFFIX 3
                        1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 1
SUFFIX 1
D                       0 0 1 1 1 0 0 0 1 1 0 0 0 1 0 1 1 1 1 1 1 1 1 0 1 0 1 0 0 0 0 0 0 0 0 0
PREFIX 2
                        1 1 0 1 1 1 1 0 1 1 0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
PREFIX 1
                        1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
R3                      -----------------------------------------------------------------------
                        0 0 0 1 1 0 0 0 1 1 0 0 0 0 0 1 1 1 1 1 1 1 1 0 1 0 1 0 0 0 0 0 0 0 0 0

     DYLYA                                   D2         YLYA
SUFFIX 3
                        1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 1
SUFFIX 1
D2                      1 1 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 0 0 1 1 0 0 1 0 1 0 0 0 0 0 0 0 0 1
PREFIX 2
                        1 1 0 1 1 1 1 0 1 1 0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
PREFIX 1
                        1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
R3                      -----------------------------------------------------------------------
                        1 1 0 0 0 0 0 0 1 1 0 1 1 0 1 1 1 1 0 0 1 1 0 0 1 0 1 0 0 0 0 0 0 0 0 0
```

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LAZEWNIK  PHASE 2  JUNE 22,1968

     DYLYA    D                                            YLY                           A
SUFFIX 3
D           1  1  1  1  1  1  0  1  1  1  0  0  0  0  1  1  1  1  1  1  1  1  1  0  1  1  0  1  0  0  1  0  0  1  1  0
SUFFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
A           0  0  0  0  1  1  1  1  1  1  0  0  1  1  0  0  0  0  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3
R5          ------------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  1  0  1  1  0  1  0  0  1  0  0  1  0  0

     DYLYA                                D                YLY                           A
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
D           0  0  1  1  1  0  0  0  1  1  0  0  0  1  0  1  1  1  1  1  1  1  1  0  1  0  1  0  0  0  0  0  0  0  0  0
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
A           0  0  0  0  1  1  1  1  1  1  0  0  1  1  0  0  0  0  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3
R5          ------------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  1  0  1  0  1  0  0  0  0  0  0  0  0  0

     DYLYA                                D2               YLY                           A
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
D2          1  1  0  0  0  0  0  1  1  1  1  1  1  1  1  1  1  1  0  0  1  1  0  0  1  0  1  0  0  0  0  0  0  0  0  1
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
A           0  0  0  0  1  1  1  1  1  1  0  0  1  1  0  0  0  0  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3
R5          ------------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  1  0  1  0  0  0  0  0  0  0  0  0

    .CIGNEN                                                OIGNE          N
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 2
N           0  1  0  0  0  0  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  0  0  0  0  0  0  1  1  1  1  1  1  1  0  0
PREFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1R2
R3
R5R6        ------------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

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LAZEWNIK  PHASE 2  JUNE 22,1968

   .CIGNEN                                       OIGNE                         N
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
N           0  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1R2
R3
R5          ----------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  1  1  1  1  1  0  0  0  0  0  0  0  0  0

   .CIGNEN     CI                                GNEN
SUFFIX 3
OI          1  0  0  1  0  0  0  1  1  1  0  0  0  0  0  1  1  1  1  0  1  0  0  0  0  0  0  0  1  0  1  1  1  0  0  0
SUFFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1 -1  1  1  1  1  1
R3R6        ----------------------------------------------------------------------------------------------------------
            1  0  0  1  0  0  0  0  1  1  0  0  0  0  0  1  1  1  1  0  1  0  0  0  0  0  0  0  1  0  1  1  1  0  0  0

   .OIGNEN                          OI           GNEN
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
OI          0  1  0  0  0  0  0  1  1  1  1  1  1  1  1  1  1  0  1  1  0  1  1  1  0  0  1  0  0  0  0  0  0  0  0  1
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3          ----------------------------------------------------------------------------------------------------------
            0  1  0  0  0  0  0  0  1  1  0  1  1  0  1  1  1  0  1  1  0  1  1  1  0  0  1  0  0  0  0  0  0  0  0  0

   .OIGNEN     OI                                GNE            N
SUFFIX 3
OI          1  0  0  1  0  0  0  1  1  1  0  0  0  0  0  1  1  1  1  0  1  0  0  0  0  0  0  0  1  0  1  1  1  0  0  0
SUFFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 2
N           0  1  0  0  0  0  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  0  0  0  0  0  0  1  1  1  1  1  1  1  0  0
PREFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3
R5R6        ----------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  1  1  1  0  0  0
```

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LAZEWNIK  PHASE 2  JUNE 22,1968

   .CIGNEN       CI                                           GNE                            N
SUFFIX 3
OI              1  0  0  1  0  0  0  1  1  1  0  0  0  0  0  1  1  1  1  0  1  0  0  0  0  0  0  0  1  0  1  1  1  0  0  0
SUFFIX 1
                1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 2
                1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
N               0  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3
R5R6            ------------------------------------------------------------------------------------------------------------
                0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  1  1  1  0  0  0

   .OIGNEN                                OI             GNE             N
SUFFIX 3
                1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
OI              0  1  0  0  0  0  0  1  1  1  1  1  1  1  1  1  1  0  1  1  0  1  1  1  0  0  1  0  0  0  0  0  0  0  0  1
PREFIX 2
N               0  1  0  0  0  0  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  0  0  0  0  0  0  1  1  1  1  1  1  1  0  0
PREFIX 1
                1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3R6            ------------------------------------------------------------------------------------------------------------
                0  1  0  0  0  0  0  1  1  0  1  1  0  1  1  1  1  0  1  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0

   .CIGNEN                                OI             GNE                             N
SUFFIX 3
                1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
OI              0  1  0  0  0  0  0  1  1  1  1  1  1  1  1  1  1  0  1  1  0  1  1  1  0  0  1  0  0  0  0  0  0  0  0  1
PREFIX 2
                1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
N               0  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3              ------------------------------------------------------------------------------------------------------------
                0  1  0  0  0  0  0  0  1  1  0  1  1  0  1  1  1  0  1  1  0  1  1  1  0  0  1  0  0  0  0  0  0  0  0  0

   .CIGNEN       C                                            IGNEN
SUFFIX 3
O               1  1  1  1  1  1  0  1  1  1  0  0  0  0  1  1  1  1  1  1  1  1  1  0  1  1  0  1  0  0  1  0  1  0  1  0
SUFFIX 1
                1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 2
                1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
                1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1R2
R3
R5              ------------------------------------------------------------------------------------------------------------
                0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  1  0  1  1  0  1  0  0  1  0  1  0  0  0
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LAZEWNIK  PHASE 2  JUNE 22,1968

   .OIGNEN                                  O              IGNEN
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
O           0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  1  1  0  0  1  0  0  0  0  0  0  0  0  0
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1B2
R3
R5          ------------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  1  1  0  0  1  0  0  0  0  0  0  0  0  0

   .OIGNEN    O                                            IGNE           N
SUFFIX 3
O           1  1  1  1  1  1  0  1  1  1  0  0  0  0  1  1  1  1  1  1  1  1  1  0  1  1  0  1  0  0  1  0  1  0  1  0
SUFFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 2
N           0  1  0  0  0  0  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  0  0  0  0  0  0  1  1  1  1  1  1  1  0  0
PREFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3R6        ------------------------------------------------------------------------------------------------------------
            0  1  0  0  0  0  0  1  1  0  0  0  0  0  1  1  1  1  1  1  1  0  0  0  0  0  0  1  0  0  1  0  1  0  0  0

   .CIGNEN    C                                            IGNE                          N
SUFFIX 3
O           1  1  1  1  1  1  0  1  1  1  0  0  0  0  1  1  1  1  1  1  1  1  1  0  1  1  0  1  0  0  1  0  1  0  1  0
SUFFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
N           0  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3          ------------------------------------------------------------------------------------------------------------
            0  1  0  0  1  1  0  0  1  1  0  0  0  0  1  1  1  1  1  1  1  1  1  0  1  1  0  1  0  0  1  0  1  0  0  0

   .CIGNEN                                  O              IGNE           N
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
O           0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  1  1  0  0  1  0  0  0  0  0  0  0  0  0
PREFIX 2
N           0  1  0  0  0  0  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  0  0  0  0  0  0  1  1  1  1  1  1  1  0  0
PREFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3
R5R6        ------------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

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LAZEWNIK  PHASE 2  JUNE 22,1968

   .CIGNEN                               O               IGNE                           N
SUFFIX 3
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  1
SUFFIX 1
O           0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  1  1  0  0  1  0  0  0  0  0  0  0  0  0
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
N           0  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3
R5          ------------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  1  1  0  0  1  0  0  0  0  0  0  0  0  0

   .CIGNEN    CI                                         GNEN
SUFFIX 3
OI          1  0  0  1  0  0  0  1  1  1  0  0  0  0  0  1  1  1  1  0  1  0  0  0  0  0  0  0  1  0  1  1  1  0  0  0
SUFFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3R6        ------------------------------------------------------------------------------------------------------------
            1  0  0  1  0  0  0  0  1  1  0  0  0  0  0  1  1  1  1  0  1  0  0  0  0  0  0  0  1  0  1  1  1  0  0  0

   .OIGNEN    OI                                         GNE             N
SUFFIX 3
OI          1  0  0  1  0  0  0  1  1  1  0  0  0  0  0  1  1  1  1  0  1  0  0  0  0  0  0  0  1  0  1  1  1  0  0  0
SUFFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 2
N           0  1  0  0  0  0  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  0  0  0  0  0  0  1  1  1  1  1  1  1  0  0
PREFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3
R5R6        ------------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  1  1  1  0  0  0

   .OIGNEN    OI                                         GNE                            N
SUFFIX 3
OI          1  0  0  1  0  0  0  1  1  1  0  0  0  0  0  1  1  1  1  0  1  0  0  0  0  0  0  0  1  0  1  1  1  0  0  0
SUFFIX 1
            1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 2
            1  1  0  1  1  1  1  0  1  1  0  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
PREFIX 1
N           0  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
R3
R5R6        ------------------------------------------------------------------------------------------------------------
            0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  1  1  1  0  0  0
```
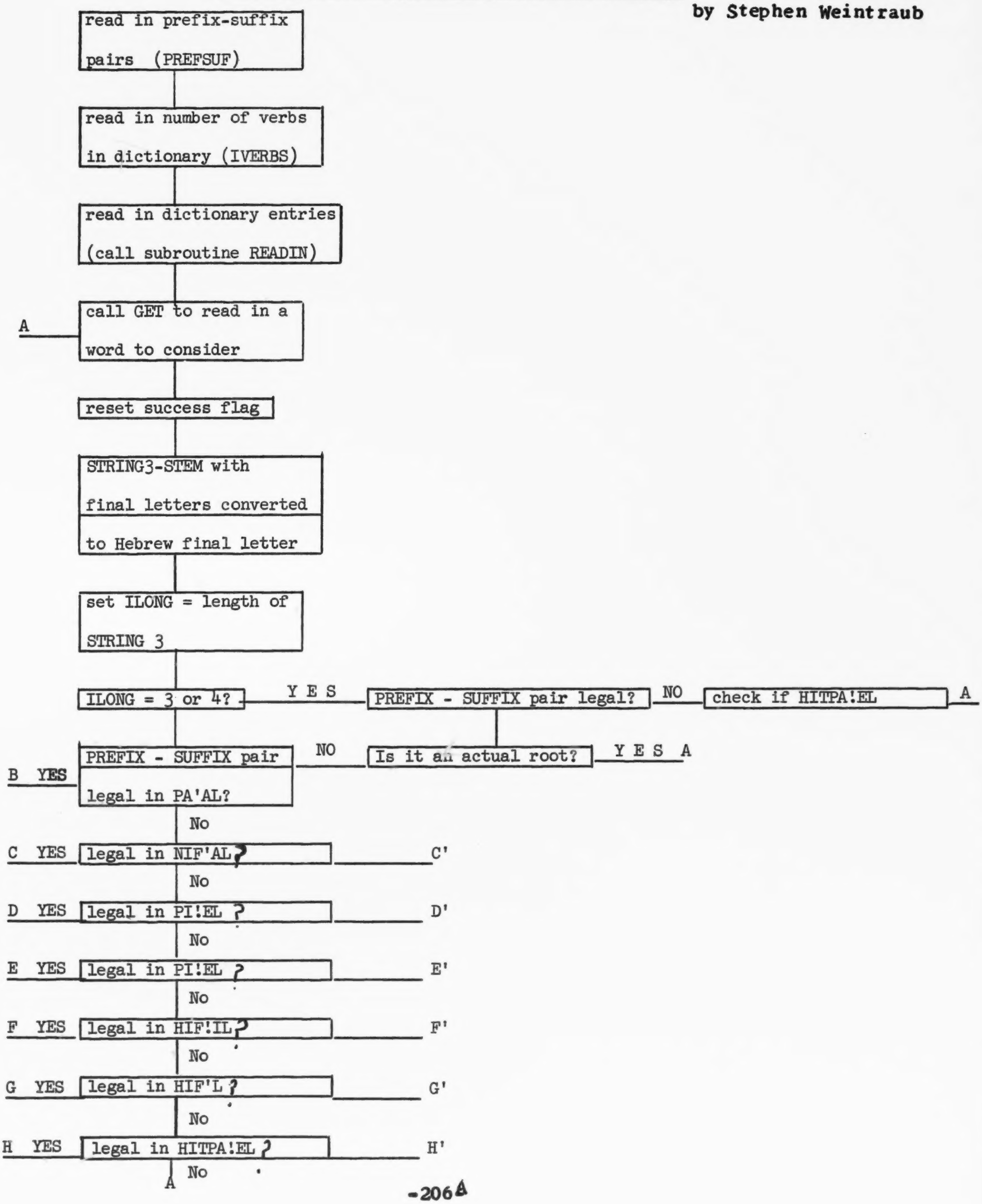
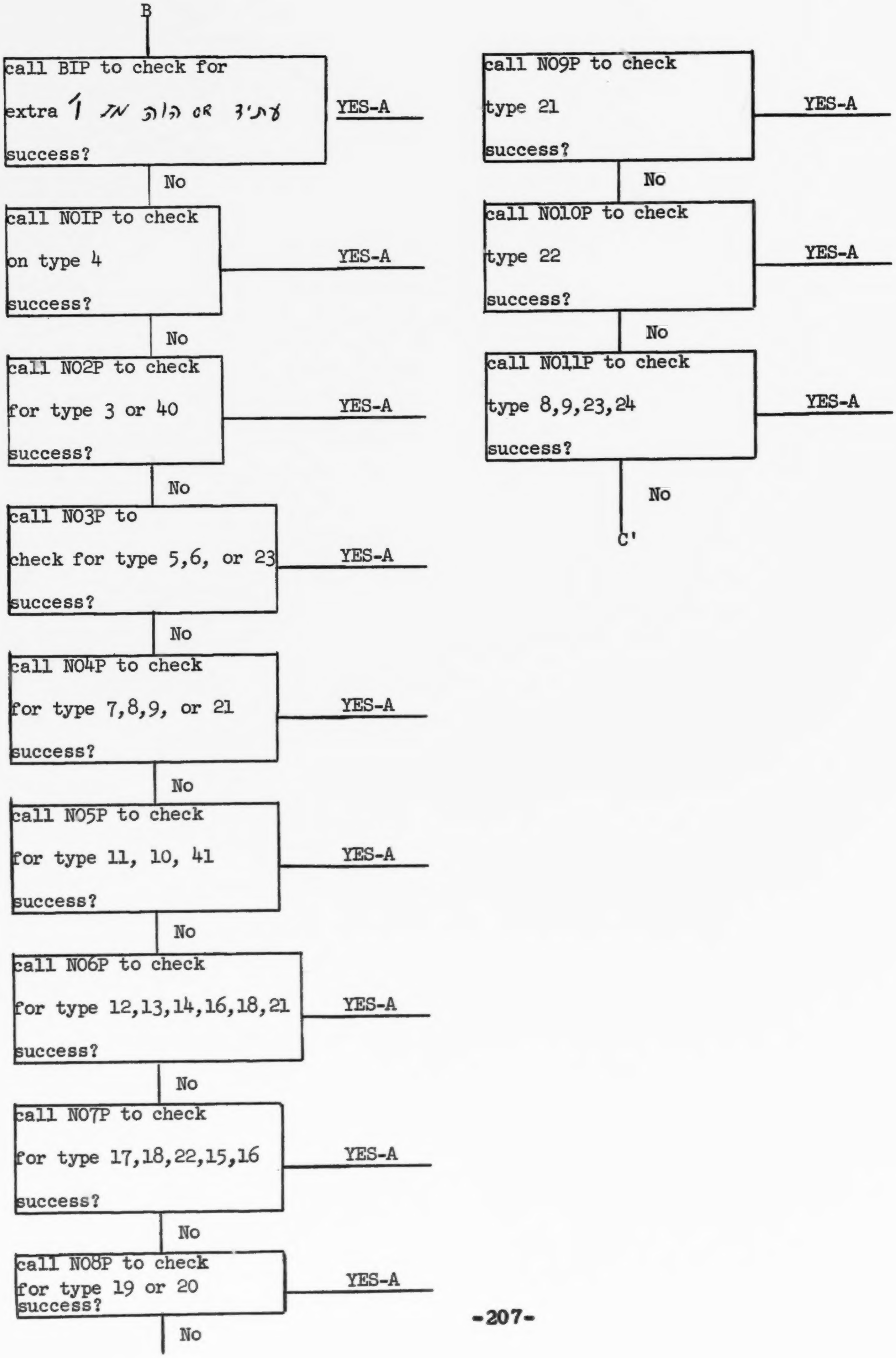
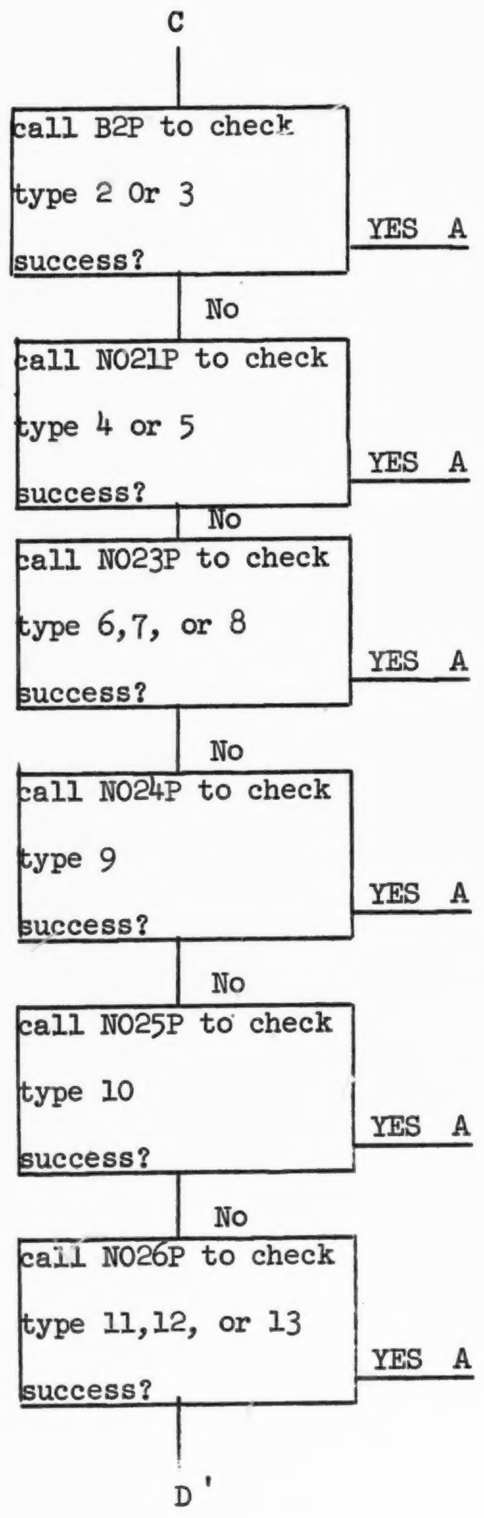
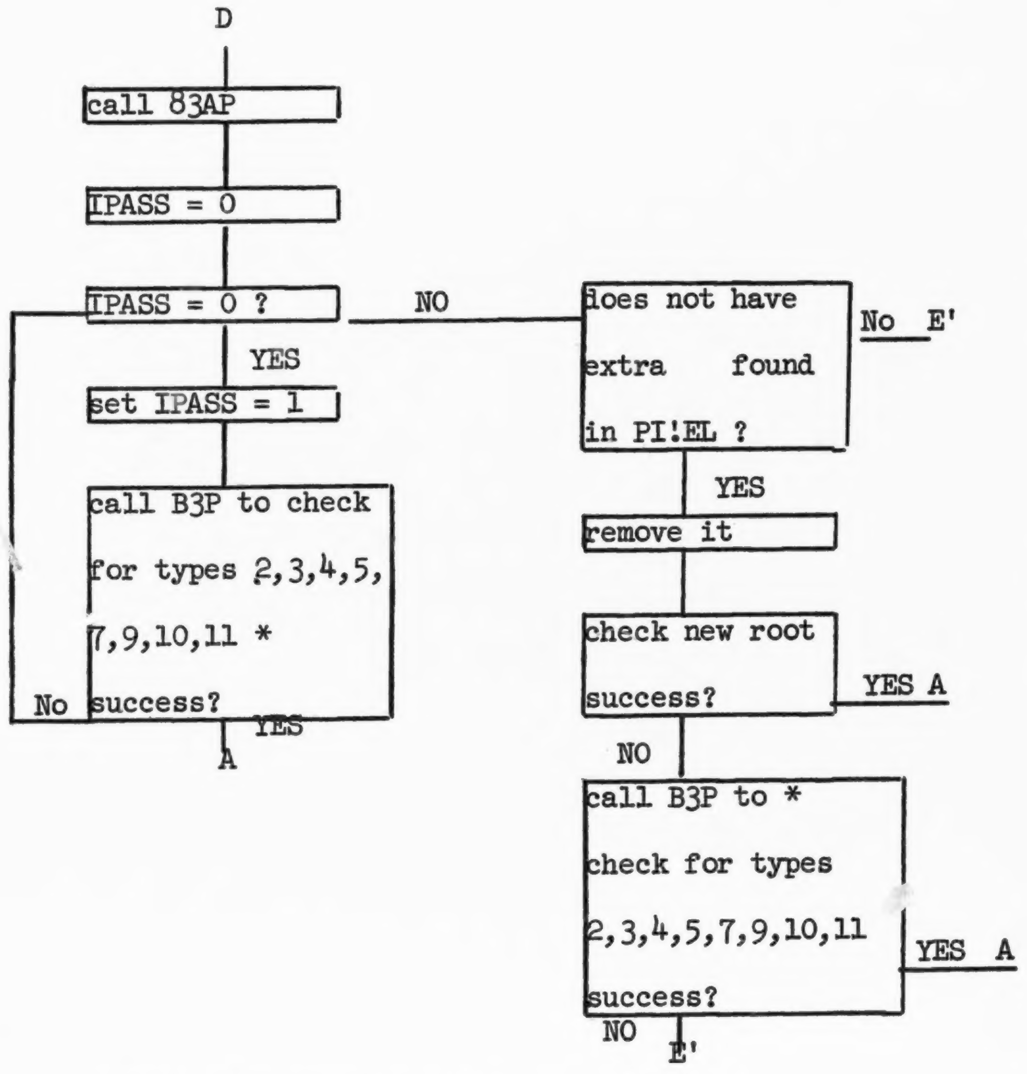

Flow-Chart of Dictionary Look-up Program

by Stephen Weintraub


read in prefix-suffix pairs (PREFSUF)
read in number of verbs in dictionary (IVERBS)
read in dictionary entries (call subroutine READIN)
A
call GET to read in a word to consider
reset success flag
STRING3-STEM with final letters converted to Hebrew final letter
set ILONG = length of STRING 3
ILONG = 3 or 4?
Y E S
PREFIX - SUFFIX pair legal?
NO
check if HITPA!EL
A
NO
Is it an actual root?
Y E S A
B YES
PREFIX - SUFFIX pair legal in PA'AL?
No
C YES
legal in NIF'AL?
C'
No
D YES
legal in PI!EL ?
D'
No
E YES
legal in PI!EL ?
E'
No
F YES
legal in HIF!IL?
F'
No
G YES
legal in HIF'L ?
G'
No
H YES
legal in HITPA!EL ?
H'
No
A

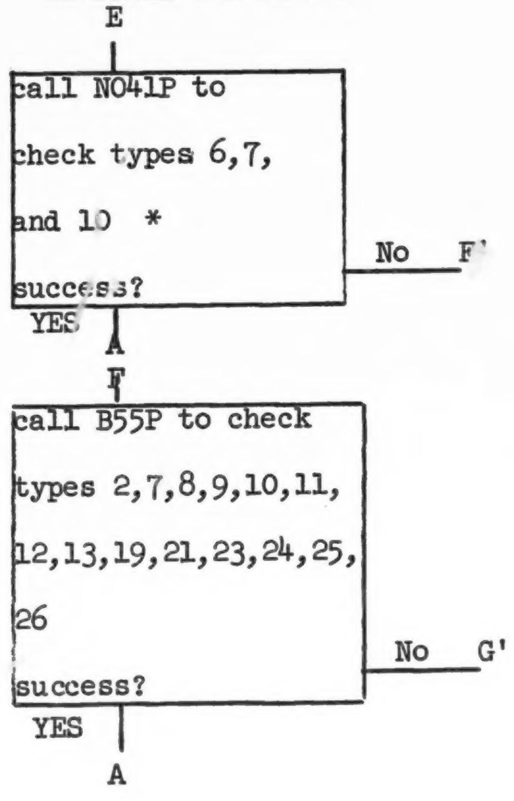

B
call BIP to check for
extra עתיד אם הוה מן ו
success?
YES-A
No
call NOIP to check
on type 4
success?
YES-A
No
call NO2P to check
for type 3 or 40
success?
YES-A
No
call NO3P to
check for type 5,6, or 23
success?
YES-A
No
call NO4P to check
for type 7,8,9, or 21
success?
YES-A
No
call NO5P to check
for type 11, 10, 41
success?
YES-A
No
call NO6P to check
for type 12,13,14,16,18,21
success?
YES-A
No
call NO7P to check
for type 17,18,22,15,16
success?
YES-A
No
call NO8P to check
for type 19 or 20
success?
YES-A
No
call NO9P to check
type 21
success?
YES-A
No
call NO10P to check
type 22
success?
YES-A
No
call NO11P to check
type 8,9,23,24
success?
YES-A
No
C'

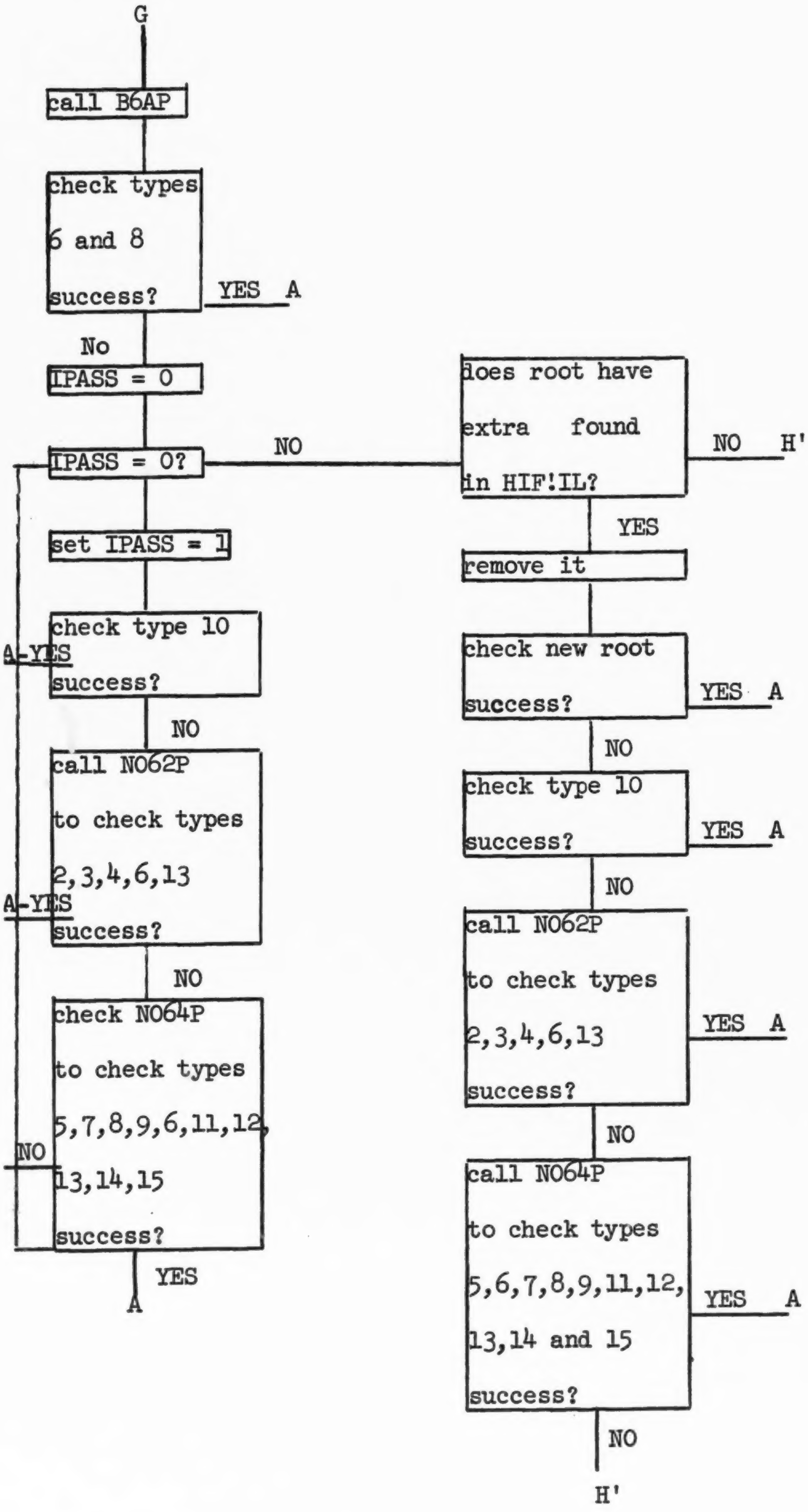

C
call B2P to check type 2 Or 3 success?
YES A
No
call NO21P to check type 4 or 5 success?
YES A
No
call NO23P to check type 6,7, or 8 success?
YES A
No
call NO24P to check type 9 success?
YES A
No
call NO25P to check type 10 success?
YES A
No
call NO26P to check type 11,12, or 13 success?
YES A
D'

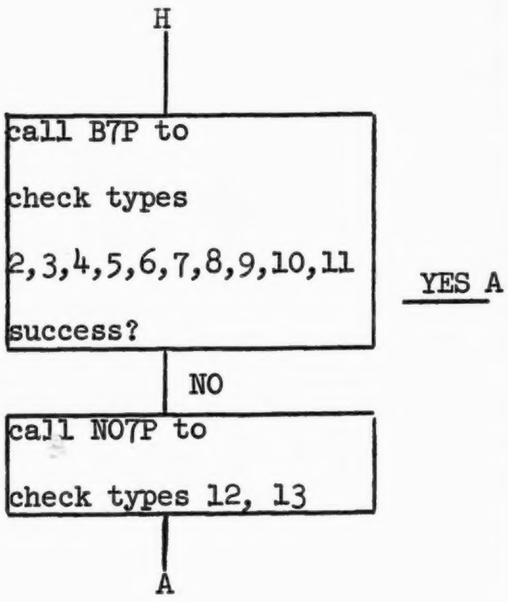

D
call 83AP
IPASS = 0
IPASS = 0 ?
NO
YES
set IPASS = 1
call B3P to check for types 2,3,4,5, 7,9,10,11 * success?
No
YES
A
does not have extra found in PI!EL ?
No E'
YES
remove it
check new root success?
YES A
NO
call B3P to * check for types 2,3,4,5,7,9,10,11 success?
YES A
NO
E'

* Note that types 2,3,4,5, are identical

in PI!EL and PIR!AL


E
call NO41P to check types 6,7, and 10 * success?
No F'
YES
A
F
call B55P to check types 2,7,8,9,10,11, 12,13,19,21,23,24,25, 26 success?
No G'
YES
A


G
call B6AP
check types 6 and 8 success?
YES A
No
IPASS = 0
IPASS = 0?
NO
does root have extra found in HIF!IL?
NO H'
YES
remove it
check new root success?
YES A
NO
check type 10 success?
YES A
NO
call N062P to check types 2,3,4,6,13 success?
YES A
NO
call N064P to check types 5,6,7,8,9,11,12, 13,14 and 15 success?
YES A
NO
H'
set IPASS = 1
check type 10 success?
A-YES
NO
call N062P to check types 2,3,4,6,13 success?
A-YES
NO
check N064P to check types 5,7,8,9,6,11,12, 13,14,15 success?
NO
YES
A


H
call B7P to check types 2,3,4,5,6,7,8,9,10,11 success?
YES A
NO
call N07P to check types 12, 13
A

Meanings of key variables and functions of important routines STRING3 is the read-in stem with the final letter changed to a Hebrew final letter if necessary. If IFLAG = 1 or IPASS = 1, however, STRING 6 holds this string and STRING 3 a transformed string. STRING 3 is transformed into STRING 5, which is a candidate for the actual root.

PREFSUF

i is the BINYAN

i =	BINYAN
1.	Pa!al
2.	Nif!al
3.	Pi!el
4.	Pu!al
5.	Hof!al
6.	Hif!il
7.	Hitpa!el

= 1 prefix

= 2 suffix

	j	"person -	tense"
ת	1	אני	עבר
ת	2	אתה	
ת	3	את	
	4	הוא	
ה	5	היא	
נו	6	אנחנו	
תם	7	אתם	
תן	8	אתן	
ו	9	הם/הן	
	10	אני/אתה/הוא	הוה
ה	11	אני/את/היא	
ת	12	אני/ את/היא	
ים	13	אנחנו/אתם/הם	
	14	אנחנו/אתם/הם	
ות	15	אנחנו/אתם/ הן	
א	16	אני	עתיד
	17	אני	
ת	18	אתה	
ת	19	את	
י	20	הוא	
ת	21	היא	
נ	22	אנחנו	
	~~23~~	~~אתם/הם~~	

	"person	tense "
ת. 23	אתם/הם	
ת 24	אתן/הן	
25	אתה	
26	אתה	
י׳ 27	את	
28	אתם	
29	אתן	
30		מקור
31		מקור

IRES= if a verb has been found, 0 otherwise

(CHECKPS (IBIN, IP1, IP2)=

if PREF1X2, SUFFIX1
is a legal prefix-suffix
pair in IBIN between
person-times IP1 and IP2
inclusive
=0 otherwise

If IARRAY (K)=0, IARRAY(1), IARRAY(2), ., IARRAY (K-1) are the possible types of STRINGS (i.e. if STRINGS is found to be an actual root, its type must be one of these to consider that the root has been found.

CHECKALL (IBIB) checks if STRINGS is an actual root and if so if its type in conjugation IBIN is one of IARRAY (1), IARRAY (2),... If IBIN=0, this checking is not performed.

Upon finding a root it calls HØØRAY to print out the good news and sets IRES=1

DICTIONARY LOOK-UP PROGRAM (Incomplete)

BY Stephen Weintraub

```
HEBREWVOPROCEDURE OPTIONS(MAIN)
     DCL M1  INITIAL( 1) EXT
     DCL M2  INITIAL( 2) EXT
     DCL M3  INITIAL( 3) EXT
     DCL M4  INITIAL( 4) EXT
     DCL M5  INITIAL( 5) EXT
     DCL M6  INITIAL( 6) EXT
     DCL M7  INITIAL( 7) EXT
     DCL M8  INITIAL( 8) EXT
     DCL M9  INITIAL( 9) EXT
     DCL M10 INITIAL(10) EXT
     DCL M11 INITIAL(11) EXT
     DCL M12 INITIAL(12) EXT
     DCL M13 INITIAL(13) EXT
     DCL M14 INITIAL(14) EXT
     DCL M15 INITIAL(15) EXT
     DCL M16 INITIAL(16) EXT
     DCL M17 INITIAL(17) EXT
     DCL M18 INITIAL(18) EXT
     DCL M19 INITIAL(19) EXT
     DCL M20 INITIAL(20) EXT
     DCL M21 INITIAL(21) EXT
     DCL M22 INITIAL(22) EXT
     DCL M23 INITIAL(23) EXT
     DCL M24 INITIAL(24) EXT
     DCL M25 INITIAL(25) EXT
     DCL M26 INITIAL(26) EXT
     DCL M27 INITIAL(27) EXT
     DCL M28 INITIAL(28) EXT
     DCL M29 INITIAL(29) EXT
     DCL M30 INITIAL(30) EXT
     DCL M31 INITIAL(31) EXT
     DCL ILONG EXT
     DECLARE(PREFSUF(7,31,2)CHARACTER(2)VARYING,
             (SUFFIX3,SUFFIX2,SUFFIX1,STEM,PREFIX2,PREFIX1,WORD)
         CHARACTER(10)VARYING,
        (STRING3,STRING5)CHARACTER(10)VARYING,
        IVERBS)EXTERNAL
     DECLARE SYSIN FILE
     DCL IRET EXT
     ~~OPEN FILE(SYSIN)~~
     GET LIST(PREFSUF)
     GET LIST(IVERBS)
     ~~CLOSE FILE(SYSIN)~~
     CALL READIN
READOCALL GET
     IRET=0
     IF SUBSTR(STEM,1,1)='K' THEN STRING3='J'  SUBSTR(STEM,2)
      ELSE IF SUBSTR(STEM,1,1)='N' THEN STRING3='M'  SUBSTR(STEM,2)
       ELSE IF SUBSTR(STEM,1,1)='P' THEN STRING3='C'  SUBSTR(STEM,2)
        ELSE IF SUBSTR(STEM,1,1)='T' THEN STRING3='S'  SUBSTR(STEM,2)
         ELSE IF SUBSTR(STEM,1,1)='V' THEN STRING3='U'  SUBSTR(STEM,2)
          ELSE STRING3=STEM
     ILONG=LENGTH(STRING3)
     IF(ILONG)3) (ILONG,4)THEN GC TO B1M
     STRING5=STRING3
 DOAODO I=1 TO 7
```

```
          IF CHECKPS(I,M1,M31) =C THEN GO TC CVERB
          END DOA
          GO TO CHISP
    CVERBOIZ=0  CALL CHECKALL(IZ)
          IF IRET=1 THEN GO TU READ
          CALL CPOALP
          IF IRET=1 THEN GO TO READ
          ELSE GO TO B1M
    CHISPOCALL CHISPP
          IF IRET=1 THEN GO TO READ
          ELSE GO TO NOUNM
    B1MOIF CHECKPS(M1,M1,M31)=0 THEN GC TO B2M
          CALL B1P
          IF IRET=1 THEN GO TO READ
          CALL NO1P
          IF IRET=1 THEN GO TU READ
          CALL NO2P
          IF IRET=1 THEN GO TU READ
          CALL NO3P
          IF IRET=1 THEN GO TO READ
          CALL NO4P
          IF IRET=1 THEN GO TO READ
          CALL NO5P
          IF IRET=1 THEN GO TO READ
          CALL NO6P
          IF IRET=1 THEN GO TO READ
          CALL NO7P
          IF IRET=1 THEN GO TO READ
          CALL NO8P
          IF IRET=1 THEN GO TO READ
          CALL NO9P
          IF IRET=1 THEN GO TO READ
          CALL NO10P
          IF IRET=1 THEN GO TO READ
          CALL NO11P
          IF IRET=1 THEN GO TO READ
    B2MOIF CHECKPS(M2,M1,M31)=0 THEN GC TO B3M
          CALL B2P
          IF IRET=1 THEN GO TO READ
          CALL NO21P
          IF IRET=1 THEN GO TO READ
          CALL NO23P
          IF IRET=1 THEN GO TO READ
          CALL NO24P
          IF IRET=1 THEN GO TO READ
          CALL NO25P
          IF IRET=1 THEN GO TO READ
          CALL NO26P
          IF IRET=1 THEN GO TO READ
    B3MOIF CHECKPS(M3,M1,M31)=0 THEN GO TO B4M
          CALL B3AP
          IF IRET=1 THEN GO TO READ
    B4MOIF CHECKPS(M4,M1,M31)=0 THEN GO TO B5M
          CALL NO41P
          IF IRET=1 THEN GO TO READ
    B5MOIF CHECKPS(M5,M1,M31)=0 THEN GO TO B6M
          CALL B5SP
```

```
           IF IRET=1 THEN GO TO READ
       B6MOIF CHECKPS(M6,M1,M31)=0 THEN GO TO B7M
           CALL B6AP
           IF IRET=1 THEN GO TO READ
       B7MOIF CHECKPS(M7,M1,M31)=0 THEN GO TO NOUNM
           CALL B7P
           IF IRET=1 THEN GO TO READ
           CALL NO71P
           IF IRET=1 THEN GO TO READ
       NOUNMOGO TO READ
           END HEBREWV
```

```
  1          BIPOPROCFDURE
  2               DECLARE IARRAY(30)EXTERNAL
  3              DCL((STRING3,STRING5)CHAR(10)VAR)EXT
  4               DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
                       M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
  5               DCL ILONG EXT
  6               IF ILONG =4 THEN RETURN
  8               IF CHECKPS(M1,M10,M15)=0 THEN GC TC NCA
 10               IF SUBSTR(STRING3,3,1) ='E' THEN GC TC NOA
 12               STRING5=SUBSTR(STRING3,1,2)  SUBSTR(STRING3,4)
 13           SETUIARRAY(1)=1
 14           DOXODO I=3 TO 12  IARRAY(I-1)=I  END DCX  IARRAY(23)=0
 18           DOYODO I=14 TO 24  IARRAY(I-2)=I  END DCY  IARRAY(18)=1
 22               CALL CHECKALL(M1)
 23               RETURN
 24           NOAOIF SUBSTR(STRING3,2,1) ='E' THEN RETURN
 26               IF CHECKPS(M1,M16,M24)=0 THEN RETURN
 28                STRING5=SUBSTR(STRING3,1,1)  SUBSTR(STRING3,3)
 29               GO TO SET
 30          END BIP
 1          NO1POPROCEDURE
 2               DECLARE IARRAY(30)EXTERNAL
 3              DCL((STRING3,STRING5)CHAR(10)VAR)EXT
 4               DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
                     M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
 5               DCL ILONG EXT
 6           NO1OIF ILONG =2 THEN GO TC NO2
 8               IF CHECKPS(M1,M16,M17)=0 THEN GO TC NO2
10               STRING5=STRING3  '+'
11               IARRAY(1)=4  IARRAY(2)=0
13               CALL CHECKALL(M1)
14          NO2ORETURN
15          END NO1P
```

```
  1          NO2POPROCEDURE
  2               DECLARE IARRAY(30)EXTERNAL
  3              DCL((STRING3,STRING5)CHAR(10)VAR)EXT
  4               DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
                      M18,M19.M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
  5               DCL ILONG EXT
  6           NO20IF ILONG =4 THEN GO TO NO3
  8               IF ,CHECKPS(M1,M10,M15)=0 THEN GO TO NO3
 10               IF SUBSTR(STRING3,2,1) ='I' THEN GO TO NO3
 12               STRING5=SUBSTR(STRING3,1,2)  SUBSTR(STRING3,4)
 13               IARRAY(1)=3  IARRAY(2)=40  IARRAY(3)=0
 16               CALL CHECKALL(M1)
 17          NO3ORETURN
 18          END NO2P
 1          NO3POPROCEDURE
 2               DECLARE IARRAY(30)EXTERNAL
 3              DCL((STRING3,STRING5)CHAR(10)VAR)EXT
 4               DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
                     M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
 5               DCL ILONG EXT
 6           NO30IF ILONG =3 THEN GO TO NO3A
 8               IF CHECKPS(M1,M30,M31)=0 THEN GC TC NC4
10               IF(SUBSTR(STRING3,1,1) ='Z' THEN GC TC NO4
12               STRING5=SUBSTR(STRING3,2)  'I'
13               IARRAY(1)=5  IARRAY(2)=6  IARRAY(3)=0
16               CALL CHECKALL(M1)
17               RETURN
18           NO3AOIF ILONG =2 THEN GO TC NO4
20               IF CHECKPS(M1,M16,M29)=0 THEN GC TC NC4
22               STRING5=STRING3  'I'
23               IARRAY(1)=6  IARRAY(3)=0  IARRAY(4)=0
26               IF CHECKPS(M1,M16,M24)=0 THEN IARRAY(2)=0  ELSE IARRAY(2)=5
29               IF(CHECKPS(M1,M24,M24)=1) (CHECKPS(M1,M29,M29)=1) THEN CO
31                   IF IARRAY(2)=0 THEN IARRAY(2)=23  ELSE IARRAY(3)=23   END
35               CALL CHECKALL(M1)
36           NO4ORETURN
37          END NO3P
```

```
NO4POPROCEDURE
      DCL IRET EXT
      DECLARE IARRAY(30)EXTERNAL
      DECLARE PREFIX1 CHAR(1C)VAR EXT
     DCL((STRING3,STRING5)CHAR(10)VAR)EXT
      DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
           M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
      DCL ILONG EXT
 NO40IF ILONG =3 THEN GO TO NO4B
      IF CHECKPS(M1,M30,M31)=0 THEN GC TC NC4B
      IF SUBSTR(STRING3,3,1) ='I' THEN GC TC NC4A
      IF PREFIX1 ='L' THEN GC TO NO5
      STRING5=SUBSTR(STRING3,1,2)  'P'
      IARRAY(1)=7  IARRAY(2)=8  IARRAY(3)=0
      CALL CHECKALL(M1)
      RETURN
NO4AOIF SUBSTR(STRING3,1,1) ='Z' THEN GC TC NO5
      STRING5=SUBSTR(STRING3,2)  'P'
      IARRAY(1)=9  IARRAY(2)=0
      CALL CHECKALL(M1)
      IF IRET=1 THEN RETURN
      STRING5=SUBSTR(STRING3,2)  'L'
      CALL CHECKALL(M1)
      RETURN
NO4BOIF ILONG =2 THEN GO TO NO5
      IF CHECKPS(M1,M16,M24)=0 THEN GC TC NC4C
      STRING5=STRING3  'P'
      IARRAY(1)=7  IARRAY(2)=8  IARRAY(3)=9  IARRAY(5)=0
      IF CHECKPS(M1,M24,M24)=0 THEN IARRAY(4)=21  ELSE IARRAY(4)=C
      CALL CHECKALL(M1)
      IF IRET=1 THEN RETURN
      STRING5=STRING3  'L'
      CALL CHECKALL(M1)
      RETURN
NO4COIF CHECKPS(M1,M25,M29)=0 THEN GO TC NC5
      STRING5=STRING3  'P'
      IARRAY(1)=8  IARRAY(3)=0
      IF CHECKPS(M1,M29,M29)=0 THEN IARRAY(2)=21  ELSE IARRAY(2)=C
      CALL CHECKALL(M1)
NO5ORETURN
END NO4P
```

```
   1              NO5POPROCEDURE
   2                   DCL IRET EXT
   3                   DECLARE IARRAY(30)EXTERNAL
   4                  DCL((STRING3,STRING6)CHAR(10)VAR)EXT
   5                   DCL IFLAG EXT
   6                   DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
                           M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
   7               NO50IARRAY(1)=10  IARRAY(2)=41  IARRAY(4)=0
  10                   IF(CHECKPS(M1,M1,M15)=1) (CHECKPS(M1,M25,M31)=1)THEN IARRAY(3)=11
  12                       ELSE IARRAY(3)=0
  13                   CALL LAMEDHAY(M1)
  14                   IF IRET=1 THEN RETURN
  16                   IF CHECKPS(M1,M16,M24)=0 THEN GO TO NC6
  18              NO5AOSTRING6=STRING3  IFLAG=1
  20                   STRING3=STRING3  'P'
  21                   IARRAY(1)=11  IARRAY(2)=0
  23                   CALL LAMEDHAY(M1)
  24                   STRING3=STRING6  IFLAG=0
  26              NO6ORETURN
  27              END NO5P
  1          NO6POPROCEDURE
  2               DCL IRET EXT
  3               DECLARE IARRAY(30)EXTERNAL
  4              DCL((STRING3,STRING5)CHAR(10)VAR)EXT
  5               DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
                      M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
  6               DCL ILONG EXT
  7           NO60IF ILONG =4 THEN GO TC NO6A
  9               IF CHECKPS(M1,M10,M15)=0 THEN GC TC NC6A
 11               IF SUBSTR(STRING3,1,2) ='CE' THEN GC TC NC6A
 13               STRING5=SUBSTR(STRING3,1,2)  SUBSTR(STRING3,4)
 14               IARRAY(1)=12  IARRAY(2)=0
 16               IF IRET=1 THEN RETURN
 18               GO TO NO7
 19          NO6A0IF CHECKPS(M1,M6,M6)=0 THEN GC TO NC6B
 21               IF ILONG =2 THEN GO TC NO7
 23               IARRAY(1)=12  IARRAY(2)=13  IARRAY(3)=21  IARRAY(4)=0
 27               CALL LAMEDNUN(M1)
 28               IF IRET=1 THEN RETURN
 30               GO TO NO7
 31          NO6B0IF(CHECKPS(M1,M24,M24)=0)&(CHECKPS(M1,M29,M29)=0) THEN GO TO NO7
 33               IARRAY(1)=12  IARRAY(2)=13  IARRAY(3)=16  IARRAY(4)=18
 37                   IARRAY(5)=0
 38               CALL LAMEDNUN(M1)
 39               IF IRET=1 THEN RETURN
 41          NO70IARRAY(1)=14  IARRAY(2)=0
 43               CALL LAMEDTUF(M1)
 44          END NO6P
 1        NO7POPROCEDURE
 2             DCL IRET EXT
 3             DCL STEM CHAR(10)VAR EXT
 4             DECLARE IARRAY(30)EXTERNAL
 5            DCL((STRING3,STRING5)CHAR(10)VAR)EXT
 6             DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
                    M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M3C,M31)EXT
 7             DCL ILONG EXT
 8         NO70IF ILONG =2 THEN GO TC NO7A
10             IF(CHECKPS(M1,M1,M15)=C)&(CHECKPS(M1,M24,M24)=0)
                                                        &(CHECKPS(M1,M29,M29)=C)

                   THEN GO TO NO7A
11             STRING5=SUBSTR(STRING3,1,1)  'E'  SUBSTR(STRING3,2)
12             IARRAY(1)=15  IARRAY(2)=16  IARRAY(4)=0
13             IF(CHECKPS(M1,M1,M3)=0)&(CHECKPS(M1,M6,M9)=0)
16                 THEN IARRAY(3)=22  ELSE IARRAY(3)=0
17             CALL CHECKALL(M1)
19             IF IRET=1 THEN RETURN
20             STRING5=SUBSTR(STRING3,1,1)  'I'  SUBSTR(STRING3,2)
22             IARRAY(1)=17  IARRAY(2)=18  IARRAY(3)=0
23             CALL CHECKALL(M1)
26             IF IRET=1 THEN RETURN
27         NO7A0IF ILONG =2 THEN GO TO NO7B
29             IF SUBSTR(STRING3,1,1) ='E' THEN GC TC NO8
31             STRING5='OI'  SUBSTR(STRING3,2)
33             IARRAY(1)=18  IARRAY(2)=0
34             CALL CHECKALL(M1)
36             RETURN
37         NO7B0IF ILONG =3 THEN GO TC NO8
38             IF SUBSTR(STRING3,2,1) ='E' THEN GC TC NO8
40             STRING5=SUBSTR(STRING3,1,1)  'I'  SUBSTR(STRING3,3)
42             IARRAY(1)=18  IARRAY(2)=0
43             CALL CHECKALL(M1)
45          NO80RETURN
46         END NO7P
```

```
         NO8POPROCEDURE
              DECLARE(IARRAY(30),
                     (SUFFIX3,SUFFIX2,SUFFIX1,STEM,PREFIX2,PREFIX1,WORD)
                  CHARACTER(10)VARYING,
                     (STRING1,STRING2,STRING3,STRING4,STRING5,STRING6)
                  CHARACTER(10)VARYING,
              IVERBS,IFLAG,IFLAG2,IPASS)EXTERNAL
              DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
                  M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
              DCL ILONG EXT
          NO80IF ILONG =2 THEN GO TO NO8A
              IF CHECKPS(M1,M10,M15)=0 THEN GC TC NC8A
              STRING5=SUBSTR(STRING3,1,1) ´STEM
              IARRAY(1)=20  IARRAY(2)=0
              CALL CHECKALL(M1)
              RETURN
         NO8AOIF ILONG =4 THEN GO TO NO8B
              IF SUBSTR(STRING3,3,1) ='I' THEN GC TC NO9
              IF SUBSTR(STRING3,1,1) =SUBSTR(STRING3,2,1)THEN GO TC NO9
              IF CHECKPS(M1,M29,M29)=0 THEN GC TC NC9
              STRING5=SUBSTR(STRING3,2)
              IARRAY(1)=19  IARRAY(2)=20  IARRAY(3)=0
              CALL CHECKALL(M1)
              RETURN
         NO8BOIF ILONG =3 THEN GO TO NO8C
              IF SUBSTR(STRING3,1,1) ='E' THEN GC TC NO9
              IF(CHECKPS(M1,M1,M3)=0)&(CHECKPS(M1,M6,M8)=0) THEN GO TO NO9
              STRING5=SUBSTR(STRING3,2,1)  SUBSTR(STRING3,2)
              IARRAY(1)=19  IARRAY(2)=20  IARRAY(3)=0
              CALL CHECKALL(M1)
              RETURN
         NO8COIF ILONG =2 THEN GO TO NO9
              IF(CHECKPS(M1,M16,M23)=0)&(CHECKPS(M1,M25,M31)=0)THEN GO TO NO9
              STRING5=SUBSTR(STRING3,1,1)  STEM
              IARRAY(1)=19  IARRAY(2)=20  IARRAY(3)=0
              CALL CHECKALL(M1)
          NO9ORETURN
         END NO8P
```

```
          NO9POPROCEDURE
               DCL  STEM CHAR(10)VAR EXT
               DECLARE IARRAY(30)EXTERNAL
              DCL((STRING3,STRING5)CHAR(10)VAR)EXT
               DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
                   M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
               DCL  ILONG EXT
           NO90IF  ILONG =2 THEN GO TO NO9A
               IF  SUBSTR(STRING3, 1, 1) ='Z' THEN GC TC NC10
               IF CHECKPS(M1,M30,M31)=0 THEN GC TC NC10
               STRING5='P'   SUBSTR(STRING3, 2, 1)    'P'
               IARRAY( 1)=21  IARRAY (2)=0
               CALL CHECKALL(M1)  RETLRN
          NO9A0IF ILONG =1 THEN GO TO NO10
               IF(CHECKPS(M1,M24,M24)=0)&(CHECKPS(M1,M29,M29)=0)THEN GO TO NO1C
               STRING5='P'   STEM    'P'
               IARRAY (1)=21  IARRAY (2)=0
               CALL CHECKALL(M1)
          NO100RETURN
          END NO9P
```

```
 1          NO10POPROCEDURE
 2               DECLARE(IARRAY(30),
                      (SUFFIX3,SUFFIX2,SUFFIX1,STEM,PREFIX2,PREFIX1,WORD)
                   CHARACTER(10)VARYING,
                      (STRING1,STRING2,STRING3,STRING4,STRING5,STRING6)
                   CHARACTER(10)VARYING,
               IVERBS,IFLAG,IFLAG2,IPASS)EXTERNAL
 3             DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
                   M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
 4             DCL ILONG EXT
 5          NO100IF ILONG =1 THEN GO TO NO11
 7             IF(CHECKPS(M1,M1,M3)=0)&(CHECKPS(M1,M7,M8)=0)THEN GO TO NO11
 9             STRING5='ZE'    STEM
10             IARRAY (1)=22  IARRAY(2)=0
12             CALL CHECKALL(M1)
13          NO11ORETURN
14          END NO10P
```

```
NO11POPROCEDURE
     DECLARE IARRAY(30)EXTERNAL
    DCL((STRING3,STRING5)CHAR(10)VAR)EXT
     DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
         M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
     DCL ILONG EXT
NO110IF ILONG =2 THEN GO TC NO11A
     IF CHECKPS(M1,M30,M31)=0 THEN GC TC NC11A
     STRING5=STRING3   'I'
     IARRAY(1)=23  IARRAY(2)=0
     CALL CHECKALL(M1)
     RETURN
NO11AOIF ILONG =4 THEN GO TC B2
     IF CHECKPS(M1,M10,M15)=0 THEN GC TC NC11B
     IF SUBSTR (STRING3, 2, 1) ='E' THEN GC TC B2
     STRING5=SUBSTR(STRING3, 1, 1)    SUBSTR(STRING3, 3)
     IARRAY (1)=23  IARRAY(2)=24  IARRAY (3)=0
     CALL CHECKALL(M1)
     RETURN
NO11BOIF ILONG =3 THEN GO TC B2
     IF CHECKPS(M1,M16,M29)=0 THEN GC TC B2
     IF SUBSTR(STRING3, 2, 1) = 'E' THEN GC TC B2
     IARRAY(1)=8  IARRAY (3)=0
     IF CHECKPS(M1,M16,M24)=1 THEN IARRAY (2)=9  ELSE IARRAY(2)=C
     STRING5=SUBSTR(STRING3,1,1)  SUBSTR(STRING3,3)  'P'
     CALL CHECKALL(M1)
  B2ORETURN
END NO11P
```

3

```
  1              B2POPROCEDURE
  2                  DCL IRET EXT
  3                  DECLARE IARRAY(30)EXTERNAL
  4             DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,M18,M19,
                     M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
  5                  IARRAY(1)=2
  6                  IARRAY(2)=0
  7                  CALL PAYYUDI(M2)
  8                  IF IRET=1 THEN RETURN
 10                  IF CHECKPS(M2, M1, M9)=0 THEN GC TC NC21
 12                  IARRAY(1)=3
 13                  CALL PAYNUN(M2)
 14             NO21ORETURN
 15             END B2P

NO ERRORS OR WARNINGS DETECTED.

COMPILE TIME        1.40 MINS
```

```
NO21POPROCEDURE
     DCL IRET EXT
     DECLARE IARRAY(30)EXTERNAL
     DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
          M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M3C,M31)EXT
NO210IARRAY (1)=4
     IARRAY(2)=5  IARRAY(3)=0
     CALL LAMEDHAY(M2)
     IF IRET=1 THEN RETURN
     IF CHECKPS(M2,M1,M9)=0 THEN GC TC NC23
NO220IARRAY (1)=5  IARRAY(2)=0
     CALL PAYNUNLAMEDHAY(M2)
NO23CRETURN
END NO21P
```

NO23POPROCEDURE

```
 1     NO23POPROCEDURE
 2          DCL IRET EXT
 3          DECLARE IARRAY(30)EXTERNAL
 4         DCL((STRING3,STRING5)CHAR(10)VAR)EXT
 5          DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
                M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
 6          DCL ILONG EXT
 7     NO230IARRAY (1)=6  IARRAY (2)=0
 9          CALL LAMEDNLN(M2)
10          IF IRET=1 THEN RETURN
12          IARRAY (1)=7
13          CALL LAMEDTLF(M2)
14          IF IRET=1 THEN RETURN
16          IF CHECKPS(M2,M1,M9)=0 THEN GC TO NC25
18          IF ILONG =4 THEN GO TO NO24
20          IF(SUBSTR(STRING3,1,1) ='E') (SUBSTR(STRING3,3,1) ='E')
21               THEN GO TO NO24
22          STRING5=SUBSTR(STRING3, 2)
23          IARRAY(1)=8  IARRAY(2)=0
25          CALL CHECKALL(M2)
26          IF IRET=1 THEN RETURN
28          STRING5=SUBSTR(STRING3,2,1)  'I'  SUBSTR(STRING3,4)
29          CALL CHECKALL(M2)
30     NO240RETURN
31     NO25CRETURN
32     END NO23P
```

```
 1          NO24POPROCEDURE
 2                DECLARE IARRAY(30)EXTERNAL
 3               DCL((STRING3,STRING5)CHAR(10)VAR)EXT
 4                DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
                      M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M3C,M31)EXT
 5                DCL ILONG EXT
 6                ILONG=LENGTH(STRING3)
 7          NO240IF ILONG =3 THEN GO TC NO25
 9                IF (SUBSTR(STRING3, 1, 1) ='E')  (SUBSTR(STRING3, 3, 1) ='E')
10                    THEN GO TO NO25
11                STRING5='O'  SUBSTR(STRING3,2)
12                IARRAY(1)=9  IARRAY(2)=0
14                CALL CHECKALL(M2)
15          NO250RETURN
16          END NO24P
```

```
  1          NO25POPROCEDURE
  2                DECLARE IARRAY(30)EXTERNAL
  3               DCL((STRING3,STRING5)CHAR(10)VAR)EXT
  4                DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
                       M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
  5                DCL ILONG EXT
  6          NO250IF ILONG =2 THEN GO TO NO26
  8                IF (CHECKPS(M2,M1,M3)=0) & (CHECKPS(M2,M6,M8)=0) THEN GO TO NO26
 10                STRING5=SUBSTR(STRING3, 1, 1)    'E'   SUBSTR(STRING3, 3)
 11                IARRAY(1)=10  IARRAY(2)=0
 13                CALL CHECKALL(M2)
 14          NO260RETURN
 15          END NO25P
```

```
          NO26POPROCEDURE
               DCL(STEM CHAR(10)VAR)EXT
               DECLARE IARRAY(30)EXTERNAL
              DCL((STRING3,STRING5)CHAR(10)VAR)EXT
               DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
                   M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
               DCL ILONG EXT
          NO26OIF ILONG =2 THEN GO TO NO26A
               STRING5=SUBSTR(STRING3, 1, 1)    STEM
               IARRAY(1)=13  IARRAY(3)=0  IARRAY(4)=0
               IF (CHECKPS(M2,M24,M24)=1)   (CHECKPS(M2,M29,M29)=1)
                                   (CHECKPS(M2,M1,M15)=1)
                   THEN IARRAY(2)=12  ELSE IARRAY(2)=0
               IF(CHECKPS(M2,M1,M3)=0)& (CHECKPS(M2,M6,M8)=0)THEN DO
                   IF IARRAY(2)=0 THEN IARRAY(2)=11  ELSE IARRAY(3)=11  END
               CALL CHECKALL(M2)
               RETURN
          NO26AOIF ILONG =3 THEN GO TO NO26B
               IF SUBSTR(STRING3,1,1) ='E' THEN GO TO NO26B
               IF CHECKPS(M2,M16,M31)=0 THEN GO TO NO26B
               STRING5=SUBSTR(STRING3,2,1)  SUBSTR(STRING3,2)
               IARRAY(1)=12  IARRAY(3)=0
               IF CHECKPS(M2,M16,M29) =0 THEN IARRAY(2)=11  ELSE IARRAY(2)=0
               CALL CHECKALL(M2
          NO26BORETURN
          END NO26P
```

```
B3APOPROCEDURE
     DCL IRET EXT
     DECLARE IARRAY(30)EXTERNAL
     DCL(STRING3,STRING5,STRING6)CHAR(10)VAR EXT
     DECLARE IPASS EXTERNAL
DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,M18,M19,
     M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
     DCL ILONG EXT
     STRING6=STRING3
     STRING5=STRING3
     IPASS=0
 CYDOIF IPASS=C THEN GO TO B3A
     IF CHECKPS(M3,M1,M9)=0 THEN GC TC B4
     IF SUBSTR(STRING3, ILONG-1,   1    ) = 'I' THEN GC TC B4
     STRING6=STRING3
     STRING5=SUBSTR(STRING3,1,ILCNG-2)  SUBSTR(STRING3,ILCNG)
     STRING3=STRING5
     D30DO J=1 TO 11  IARRAY(J)=J  END D3  IARRAY(12)=0
         IARRAY(5)=1  IARRAY(7)=1  IARRAY(10)=1
     CALL CHECKALL(M3)
     IF IRET=1 THEN GO TO B4
B3A0CALL B3P
CC0IF IPASS=1 THEN GO TO B4
     IF IRET=1 THEN RETURN
     IPASS=1  GO TO CYD
  B40IPASS=0  STRING3=STRING6  RETURN
END B3AP
```

```
B3POPROCEDURE
     DCL IRET EXT
     DECLARE IARRAY(30)EXTERNAL
    DCL((STRING3,STRING5)CHAR(10)VAR)EXT
     DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
         M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M3C,M31)EXT
     DCL ILONG EXT
 B3A0IARRAY(1)=2  IARRAY(2)=0
     CALL LAMEDHAY(M3)
     IF IRET=1 THEN RETURN
     IARRAY(1)=3
     CALL LAMEDNUN(M3)
     IF IRET=1 THEN RETURN
     IARRAY(1)=4
     CALL LAMEDTUF(M3)
     IF IRET=1 THEN RETURN
     IARRAY(1)=5  IARRAY(3)=0  IARRAY(4)=0
     IF CHECKPS(M3,M1,M9)=0 THEN IARRAY(2)=9  ELSE IARRAY(2)=0
     IF(CHECKPS(M3,M6,M6)=0)& (CHECKPS(M3,M24,M24)=0)
                                                &(CHECKPS(M3,M29,M29)=0)
     THEN DO  IF IARRAY(2)=C THEN IARRAY(2)=10  ELSE IARRAY(3)=1C  END
     CALL AYINVYI(M3)
     IF IRET=1 THEN RETURN
     IF ILONG =4 THEN GO TO CCA
     IF (SUBSTR(STRING3, 3, 1) ='E')
         (SUBSTR(STRING3, 1, 1) =SUBSTR(STRING3, 2, 1))THEN GO TO NO31
     STRING5=SUBSTR(STRING3, 1, 2)    SUBSTR(STRING3, 4)
     IARRAY(1)=7  IARRAY(2)=0
     CALL CHECKALL(M3)
     RETURN
 CCA0IF ILONG =3 THEN GO TO CC
     IF CHECKPS(M3,M1,M3)=0 THEN GC TC CC
     IF SUBSTR(STRING3, 1, 1) ='Z' THEN GC TC CC
     STRING5='Z'   STRING3
     IARRAY(1)=11  IARRAY (2)=0
     CALL CHECKALL(M3)
CC0RETURN
NO310RETURN
END B3P
```

```
NO41POPROCEDURE
     DECLARE(STEM CHAR(10)VAR)EXT
     DECLARE IARRAY(30)EXTERNAL
    DCL((STRING3,STRING5)CHAR(10)VAR)EXT
DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,M18,M19,
     M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
     DCL ILONG EXT
     IF ILONG =3 THEN GO TO NO41
     IF CHECKPS(M4,M1,M3)=0 THEN RETURN
     STRING5='Z'   STEM
     IARRAY(1)=10  IARRAY(2)=0
     CALL CHECKALL(M4)
     RETURN
NO410IF ILONG =4 THEN GO TO B6
     IF(SUBSTR(STRING3,2,1) ='E') (SUBSTR(STRING3,3,1) ='I')
          THEN GO TO NO42
     STRING5=SUBSTR(STRING3,1,1)  SUBSTR(STRING3,3)
     IARRAY(1)=6  IARRAY(2)=0
     CALL CHECKALL(M4)
     RETURN
NO420IF(SUBSTR(STRING3,3,1) ='E')  (SUBSTR(STEM,1,1) =SUPSTR(STEM,2,1))
           THEN GO TO B6
     STRING5=SUBSTR(STRING3,1,2)  SUBSTR(STRING3,4)
     IARRAY(1)=7   IARRAY(2)=0
     CALL CHECKALL(M4)
B6ORETURN
END NO41P
```

```
B5SPOPROCEDURE
     DCL IRET EXT
     DECLARE IARRAY(30)EXTERNAL
    DCL((STRING3,STRING5)CHAR(10)VAR)EXT
DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,M18,M19,
     M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
     DCL ILONG EXT
     IF(SUBSTR(STRING3,ILONG) ='E' THEN GC TC B5S
     STRING5=SUBSTR(STRING3,1,ILCNG-1)  'I'
     IARRAY(1)=2  IARRAY(2)=0
     CALL CHECKALL(M5)
     IF IRET=1 THEN RETURN
B5SOIARRAY(1)=7  IARRAY(2)=22  IARRAY(3)=26  IARRAY(4)=0
     CALL LAMEDHAY(M5)
     IF IRET=1 THEN RETURN
    IARRAY(1)=8  IARRAY(2)=19  IARRAY(3)=21  IARRAY(4)=24  IARRAY(5)=C
     CALL LAMEDNLN(M5)
     IF IRET=1 THEN RETURN
     IARRAY(1)=9  IARRAY(2)=0
     CALL LAMEDTLF(M5)
     IF IRET=1 THEN RETURN
     IARRAY(1)=1C
     CALL AYINVYI(M5)
     IF IRET=1 THEN RETURN
     IARRAY(1)=11
     CALL AYINVAVLAMEDNUN(M5)
     IF IRET=1 THEN RETURN
     IARRAY(1)=12
     CALL AYINVYII(M5)
     IF IRET=1 THEN RETURN
     IF ILONG =4 THEN GO TC NOUN
     IF(SUBSTR(STRING3,3,1) ='E') (SUBSTR(STRING3,1,1) =
        SUBSTR(STRING3,2,1)) THEN GC TC NCUN
     STRING5=SUBSTR(STRING3,1,2)  SUBSTR(STRING3,4)
     IARRAY(1)=13  IARRAY(2)=23  IARRAY(3)=25  IARRAY(4)=0
     CALL CHECKALL(M5)
NOUNORETURN
END B5SP
```

```
          B6APOPROCEDURE
               DECLARE IARRAY(30)EXTERNAL
               DCL(STRING3,STRING5,STRING6)CHAR(10)VAR EXT
               DCL IPASS EXT
          DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,M18,M19,
               M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
               DCL IRET EXT
               STRING6=STRING3
               STRING5=STRING3
               IARRAY(1)=6   IARRAY(2)=18
               CALL CHECKALL(M6)
               IF IRET=1 THEN RETURN
               IPASS=0
          CYUD0IF IPASS=0 THEN GO TO N061
               IF SUBSTR(STRING3,2,1) ='I' THEN GO TO B7
               IF(CHECKPS(M6,M16,M24)=0)&(CHECKPS(M6,M27,M28)=0)
               &(CHECKPS(M6,M30,M31)=0)&(CHECKPS(M6,M4,M5)=0)
               &(CHECKPS(M6,M9,M9)=0)
               THEN GO TO B7
               STRING6=STRING3  IPASS=1
               STRING3=SUBSTR(STRING3,1,1)  SUBSTR(STRING3,3)
               STRING5=STRING3
          D20DO J=1 TO 4
               IARRAY(J)=J   END D2
               IARRAY(5)=8   IARRAY(6)=9    IARRAY(7)=11
               IARRAY(8)=0
               CALL CHECKALL(M6)
               IF IRET=1 THEN GO TO B7
          N0610IF ILONG =4 THEN GO TO N062
               IF SUBSTR(STRING3,1,1) ='E' THEN GO TO B7
               IF SUBSTR(STRING3,3,1) ='I' THEN GO TO B7
               STRING5=SUBSTR(STRING3,2,1)  'E'  SUBSTR(STRING3,4)
               IARRAY(1)=10   IARRAY(2)=0
               CALL CHECKALL(6)   GO TO B7
          N0620CALL N062P
               IF IRET=1 THEN GO TO B7
          CALL N064P
               IF IRET=1 THEN GO TO B7
          C0IF IPASS=1 THEN GO TO B7
               IPASS=1   GO TO CYUD
           B70IPASS=0  STRING3=STRING6  RETURN
          END B6AP
```

```
NO64POPROCEDURE
     DCL IRET EXT
     DECLARE IARRAY(30)EXTERNAL
     DCL STEM CHAR(10)VAR EXT
     DCL(STRING3,STRING5,STRING6)CHAR(10)VAR EXT
DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,M18,M19,
     M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
     DCL IFLAG EXT
     DCL ILONG EXT
NO640IARRAY(1)=7
     CALL PAYNUNLAMEDHAY(M6)
     IF IRET=1 THEN RETURN
     IARRAY(1)=8
     CALL LAMEDNUN(M6)
     IF IRET=1 THEN RETURN
     IARRAY(1)=9
     CALL LAMEDTUF(M6)
     IF IRET=1 THEN RETURN
     IARRAY(1)=11    IARRAY(2)=0
     CALL AYINVYII(M6)
     IF IRET=1 THEN RETURN
     IARRAY(1)=12
     CALL AYINVAVLAMEDNUN(M6)
     IF IRET=1 THEN RETURN
     IARRAY(1)=13
     CALL AYINVAVLAMEDTUF(M6)
     IF IRET=1 THEN RETURN
     IARRAY(1)=5
     CALL LAMEDHAY(M6)
     IF IRET=1 THEN RETURN
     IF SUBSTR(STRING3,ILONG) ='E' THEN GO TO B7
     STRING6=STRING3
     IFLAG=1
     STRING3=SUBSTR(STRING3,1,ILONG-1)  'I'
     IARRAY(1)=6
     CALL LAMEDHAY(M6)
     STRING3=STRING6  IFLAG=0
     IF IRET=1 THEN RETURN
     IF(CHECKPS(M6,M1,M3)=0)&(CHECKPS(M6,M6,M9)=0)THEN GO TO NO63
     IF SUBSTR(STRING3,1,1) ='E' THEN GO TO NO63
     STRING5=SUBSTR(STRING3,2,1)  SUBSTR(STRING3,2)
     IARRAY(1)=14
     CALL CHECKALL(M6)  RETURN
NO630STRING5=SUBSTR(STRING3,1,1)  STEM
     IARRAY(1)=15
     CALL CHECKALL(M6)
B7ORETURN
CORETURN
END NO64P
```

```
NO62POPROCEDURE
     DCL IRET EXT
     DECLARE IARRAY(30)EXTERNAL
     DCL(STRING3,STRING6)CHAR(10)VAR EXT
     DCL IFLAG EXT
DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,M18,M19,
     M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
NO620IARRAY(1)=2   IARRAY(2)=0
     CALL PAYYUDI(M6)
     IF IRET=1 THEN RETURN
     IARRAY(1)=3
     CALL PAYYUDII(M6)
     IF IRET=1 THEN RETURN
     IARRAY(1)=4
     CALL PAYNUN(M6)
     IF IRET=1 THEN RETURN
     STRING6=STRING3
     IFLAG=1
     IARRAY(1)=6
     STRING3=STRING6  'I'
     CALL PAYYUDI(M6)
     IF IRET=1 THEN GO TO RESET
     IARRAY(1)=13
     STRING3='E'  STRING6
     CALL LAMEDTUF(M6)
     RESETOSTRING3=STRING6
     IFLAG=0
NO640RETURN
END NO62P
```

```
B7POPROCEDURE
   DCL IRET EXT
   DECLARE IARRAY(30)EXTERNAL
  DCL((STRING3,STRING5)CHAR(10)VAR)EXT
DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,M18,M19,
   M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
   DCL ILONG EXT
   IARRAY(1)=2   IARRAY(3)=0
   IF CHECKPS(M7,M1,M3)=0 THEN IARRAY(2)=0
   ELSE IARRAY(2)=13
    CALL PAYYUDI(M7)
   IF IRET=1 THEN RETURN
   IARRAY(1)=3
   CALL PAYYUDII(M7)
   IF IRET=1 THEN RETURN
   IARRAY(1)=4   IARRAY(2)=0
   CALL PAYNUN(M7)
   IF IRET=1 THEN RETURN
   IARRAY(1)=5
   CALL LAMEDHAY(M7)
   IF IRET=1 THEN RETURN
   IARRAY(1)=6
   CALL PAYNUNLAMEDHAY(M7)
   IF IRET=1 THEN RETURN
   IARRAY(1)=7
   CALL LAMEDNUN(M7)
   IF IRET=1 THEN RETURN
   IARRAY(1)=8
   CALL LAMEDTUF(M7)
   IF IRET=1 THEN RETURN
   IF SUBSTR(STRING3,ILONG) ='E' THEN GO TO NO71
   STRING5=SUBSTR(STRING3,1,1)  'E'  SUBSTR(STRING3,2)
   IARRAY(1)=9   IARRAY(2)=0   IARRAY(3)=0   IARRAY(4)=0
IF(CHECKPS(M7,M23,M23)=0)&(CHECKPS(M7,M27,M27)=0)&(CHECKPS(M7,M6,M6)=0)
   THEN IARRAY(2)=10  ELSE IARRAY(2)=0
   IF(CHECKPS(M7,M1,M3)=0)&(CHECKPS(M7,M7,M8)=0)THEN DO
   IF IARRAY(2) =0 THEN IARRAY(3)=11
   ELSE IARRAY (2)=11   END
   CALL CHECKALL(M7)
   IF IRET=1 THEN RETURN
   STRING5=SUBSTR(STRING3,1,1)  'I'  SUBSTR(STRING3,2)
   CALL CHECKALL(M7)
   IF IRET=1 THEN RETURN
IF(CHECKPS(M7,M6,M6)=0)&(CHECKPS(M7,M24,M24)=0)&(CHECKPS(M7,M29,M29)=0)
   THEN GO TO NO71
   STRING5='PE'  SUBSTR(STRING3,1,1)
   IARRAY(1)=10   IARRAY(2)=0
   CALL CHECKALL(M7)
   IF IRET=1 THEN RETURN
   IF(CHECKPS(M7,M1,M3)=0)&(CHECKPS(M7,M7,M8)=0) THEN GO TO NO71
   IARRAY(1)=11
   CALL CHECKALL(M7)
NO710RETURN
END B7P
```

```
NO71POPROCEDURE
     DCL IRET EXT
     DECLARE IARRAY(30)EXTERNAL
    DCL((STRING3,STRING5)CHAR(10)VAR)EXT
DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,M18,M19,
     M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
     DCL ILONG EXT
NO710IF SUBSTR(STRING3,ILONG) ='E' THEN GO TC NC72
     STRING5=SUBSTR(STRING3,1,1)  SUBSTR(STEM,1,ILCNG-1)
     IARRAY(1)=12   IARRAY(2)=0
     CALL CHECKALL(M7)
     IF IRET=1 THEN RETURN
NO720IF CHECKPS(M7,M1,M3)=0 THEN 6C TO NCUN
     IF ILONG =1 THEN GO TO NO72A
     STRING5='Z'  STEM  'I'
     IARRAY(1)=13   IARRAY(2)=0
     CALL CHECKALL(M7)
     RETURN
NO72AO IF ILONG =2 THEN GO TO NOUN
     IF SUBSTR(STRING3,2) ='E' THEN GO TC NCUN   IARRAY(1)=13
     IARRAY(2)=0
     CALL CHECKALL(M7)
NOUNORETURN
END NO71P
```

```
CPOALPOPROCEDURE
     DCL IRET EXT
     DECLARE IARRAY(30)EXTERNAL
    DCL((STRING3,STRING5)CHAR(10)VAR)EXT
     DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
         M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
     DCL ILONG EXT
     IF ILONG)5 THEN GO TO NOUN
CPOAL0IF CHECKPS(M4,M1,M31)=0 THEN GO TC NCUN
     IF SUBSTR(STRING3, 2, 1) ='E' THEN GC TC NCUN
     IF ILONG=6 THEN DO
     IF SUBSTR(STRING3, 5, 1) ='E' THEN GC TC NOUN
     STRING5=SUBSTR(STRING3, 1, 1)  SUBSTR(STRING3, 3, 2)
                                    SUBSTR(STRING3, 6)
     IARRAY(1)=9  IARRAY(2)=0
     CALL CHECKALL(M4)
     IF IRET=1 THEN RETURN
     STRING5=SUBSTR(STRING3, 1, 1)  SUBSTR(STRING3, 4, 1)
                               SUBSTR(STRING3,6)
     IARRAY(1)=8
     CALL CHECKALL(M4)
     IF IRET=1 THEN RETURN
     END
            ELSE DO
     STRING5=SUBSTR(STRING3, 1, 1)  SUBSTR(STRING3, 3)
     IARRAY(1)=9  IARRAY(2)=0
     CALL=CHECKALL(M4)        IF CALL =0 THEN RETURN(1)
     IF SUBSTR(STRING3, 4, 1) ='E' THEN GC TC N1
     STRING5=SUBSTR(STRING3, 1, 1)  SUBSTR(STRING3, 3, 1)
                                    SUBSTR(STRING3,  5)
     IARRAY(1)=6  IARRAY(2)=7  IARRAY(3)=0
     CALL CHECKALL(M4)
     IF IRET=1 THEN RETURN
     GO TO NOUN  END
 N1OIF (SUBSTR(STRING3, 3, 1) =SUBSTR(STRING3, 5, 1)) THEN GO TC NOUN
     STRING5=SUBSTR(STRING3, 1, 1)  SUBSTR(STRING3, 4)
     IARRAY(1)=8  IARRAY (2)=0
     CALL CHECKALL(M4)
NOUNORETURN
END CPQALP
```

```
CHISPPOPROCEDURE
      DCL IRET EXT
      DECLARE PREFIX2 CHAR(10)VAR EXT
      DECLARE(IARRAY(30),
            (STRING1,STRING2,STRING3,STRING4,STRING5,STRING6)
         CHARACTER(10)VARYING,
      IFLAG2)EXT
      DECLARE IPRL(4)CHARACTER(1) INITIAL('F','V','C','Y'),
               IWDL(4)CHARACTER(1) INITIAL('C','H','Z','Z')
      DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
         M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
- CHISPOIF LENGTH(PREFIX2) =2 THEN-GO TC NOUN
      IF CHECKPS(M5,M1,M31)=C THEN GO TC NOUN
      IFLAG2=1
      STRING1=PREFIX2
      PREFIX2='Z'  SUBSTR(STRING1,2)
      STRING2=SUBSTR(STRING1,1,1)
      STRING4=SUBSTR(STRING3,ILONG)
CHDOODO ILET=1 TO 4
      IF(STRING2=IPRL(ILET))&(STRING4=IWDL(ILET))THEN GO TO CHF
      END CHDO
      GO TO NOUN
CHFOSTRING6=STRING3
      IFLAG2=1
      STRING3=SUBSTR(STRING6,1,ILONG-1)  IPRL(ILET)
      IARRAY(1)=ILET+2   IARRAY(3)=0
      IF IARRAY(1)=6 THEN DO
      IARRAY(1)=5   IARRAY(2)=0       END
            ELSE IARRAY(2)=IARRAY(1)+12
      CALL CHECKALL(M5)
      STRING3=STRING6  IFLAG2=0
NOUNORETURN
B5SORETURN
END CHISPP
```

```
PAYNUNLAMEDHAYCPROCEDURE(IBIN)
     DCL(STRING3,STRING6)CHAR(10)VAR EXT
     DCL IFLAG EXT
     STRING6=STRING3
     STRING3=STRING6  'P'   IFLAG=1
     CALL LAMEDHAY(IBIN)   STRING3=STRING6
     IFLAG=0   RETURN
END PAYNUNLAMEDHAY
```

```
LAMEDTUFOPROCEDURE(IBIN)
     DCL STEM CHAR(10)VAR EXT
    DCL((STRING3,STRING5)CHAR(10)VAR)EXT
DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,M18,M19,
     M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
     IF(CHECKPS(IBIN,M1,M3)=0)&(CHECKPS(IBIN,M7,M8)=0)
     THEN RETURN
     STRING5='Z'  SUBSTR(STEM,1,1)  SUBSTR(STRING3,2)
     CALL CHECKALL(IBIN)
     RETURN
END LAMEDTUF
```

```
 1          AYINVYIIOPROCEDURE (IBIN)
 2               DECLARE IARRAY(30)EXTERNAL
 3              DCL((STRING3,STRING5)CHAR(10)VAR)EXT
 4               DCL ILONG EXT
 5               IF ILONG =3 THEN RETURN
 7               IF SUBSTR(STRING3,2,1) ='I' THEN RETURN
 9               STRING5=SUBSTR(STRING3,1,1)  'E'  SUBSTR(STRING3,3)
10               CALL CHECKALL(IBIN)   RETURN
12          END AYINVYII
```

```
1             AYINVAVLAMEDTUFOPROCEDURE(IBIN)
2             DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,M18,M19,
                   M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
3                  DCL(STRING3,STRING6)CHAR(10)VAR EXT
4                  DCL IFLAG EXT
5                  IF(CHECKPS(IBIN,M1,M3)=0)&(CHECKPS(IBIN,M7,M8)=0) THEN RETURN
7                  IFLAG=1
8                  STRING6=STRING3
9                  STRING3='Z'  STRING6
10                 CALL AYINVYI(IBIN)  STRING3=STRING6  IFLAG=0  RETURN
14            END AYINVAVLAMEDTUF
```

```
 1            AYINVAVLAMEDNUNOPROCEDURE(IBIN)
 2            DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,M18,M19,
                   M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
 3                 DCL(STRING3,STRING6)CHAR(10)VAR EXT
 4                 DCL IFLAG EXT
 5                 IF(CHECKPS(IBIN,M6,M6)=0)&(CHECKPS(IBIN,M23,M23)=0)
 6                 &(CHECKPS(IBIN,M27,M27)=0) THEN RETURN
 7                 IFLAG=1
 8                 STRING6=STRING3
 9                 STRING3='P'  STRING6
10                 CALL AYINVYI(IBIN)   STRING3=STRING6
12                 IFLAG=0
13                 RETURN
14            END AYINVAVLAMEDNUN
```

```
 1              AYINVYIOPROCEDURE(IBIN)
 2                   DCL IRET EXT
 3                   DCL ILONG EXT
 4                  DCL((STRING3,STRING5)CHAR(10)VAR)EXT
 5                   IF ILONG =4 THEN RETURN
 7                  IF SUBSTR(STRING3,3,1) ='E' THEN RETURN
 9                   IF SUBSTR(STRING3,1,1) =SUBSTR(STRING3,2,1) THEN RETURN
11                   STRING5=SUBSTR(STRING3,2)
12                   CALL CHECKALL(IBIN)
13                   IF IRET=1 THEN RETURN
15                   STRING5=SUBSTR(STRING3,2,1)  'I'  SUBSTR(STRING3,4)
16                   CALL CHECKALL(IBIN)  RETURN
18              END AYINVYI
```

```
 1          PAYYUDIIOPROCEDURE(IBIN)
 2              DCL((STRING3,STRING5)CHAR(10)VAR)EXT
 3               DCL ILONG EXT
 4               IF ILONG =2 THEN RETURN
 6               STRING5=STRING3  'I'
 7               CALL CHECKALL(IBIN)   RETURN
 9          END PAYYUDII
```

```
PAYNUNOPROCEDURE(IBIN)
    DCL((STRING3,STRING5)CHAR(10)VAR)EXT
     DCL ILONG EXT
     IF ILONG =2 THEN RETURN
     STRING5=STRING3  'P'
     CALL CHECKALL(IBIN)
     RETURN
END PAYNUN
```

```
 1        LAMEDNUNOPROCEDURE(IBIN)
 2             DCL STEM CHAR(10)VAR EXT
 3             DCL ILONG EXT
 4            DCL((STRING3,STRING5)CHAR(10)VAR)EXT
 5        DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,M18,M19,
               M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
 6             IF ILONG =2 THEN RETURN
 8             IF(CHECKPS(IBIN,M6,M6)=0)&(CHECKPS(IBIN,M24,M24)=0)
 9             &(CHECKPS(IBIN,M29,M29)=0) THEN RETURN
10             STRING5='0'  SUBSTR(STEM,1,1)  SUBSTR(STRING3,2)
11             CALL CHECKALL(IBIN)
12             RETURN
13        [illegible] LAMEDNUN
```

```
 1          PAYYUDIOPROCEDURE(IBIN)
 2              DCL((STRING3,STRING5)CHAR(10)VAR)EXT
 3               DCL ILONG EXT
 4               IF ILONG =3 THEN RETURN
 6               IF SUBSTR(STRING3,3) ='E' THEN RETURN
 8               STRING5=SUBSTR(STRING3,1,2)  'I'
 9               CALL CHECKALL(IBIN)
10               RETURN
11          END PAYYUDI
```

```
LAMEDHAYOPROCEDURE(IBIN)
      DCL ILONG EXT
     DCL((STRING3,STRING5)CHAR(10)VAR)EXT
      DCL(M1,M2,M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13,M14,M15,M16,M17,
          M18,M19,M20,M21,M22,M23,M24,M25,M26,M27,M28,M29,M30,M31)EXT
      IF ILONG =3 THEN GO TC NOA
      IF CHECKPS(IBIN,M5,M5)=0 THEN GC TC NCB
      IF SUBSTR(STRING3,1,1) ='Z' THEN GC TC NOE
      STRING5='D'  SUBSTR(STRING3,2)
      CALL CHECKALL(IBIN)
      RETURN
NOBOIF(CHECKPS(IBIN,M1,M3)=C)&(CHECKPS(IBIN,M6,M8)=0) THEN RETURN
      STRING5='D'  SUBSTR(STRING3,2)
      IF SUBSTR(STRING3,1,1) ='I' THEN RETURN
      CALL CHECKALL(IBIN)
      RETURN
NOAOIF(CHECKPS(IBIN,M9,M9)=C)&(CHECKPS(IBIN,M13,M15)=0)
&(CHECKPS(IBIN,M28,M29)=0)&(CHECKPS(IBIN,M18,M18)=0)
&(CHECKPS(IBIN,M22,M24)=0) THEN GO TO NCC
      IF ILONG =2 THEN RETURN
      STRING5='D'  SUBSTR(STEM,1,1)  SUBSTR(STRING3,2)
      CALL CHECKALL(IBIN)
      RETURN
NOCOIF CHECKPS(IBIN,M30,M31)=0 THEN RETURN
      IF ILONG =4 THEN RETURN
      IF SUBSTR(STRING3,1,2) ='ZE' THEN RETURN
      STRING5='D'  SUBSTR(STRING3,3)
      CALL CHECKALL(IBIN)
      RETURN
  END LAMEDHAY
```

```
         CHECKPSOPROCEDURE(IBA,IP1,IP2)
              DECLARE(PREFIX2,SUFFIX1)CHAR(10)VAR EXT
              DECLARE PREFSUF(7,31,2)CHAR(2)VAR EXT
              DO IPA=IP1 TO IP2
              IF(PREFSUF(IBA,IPA,1)=PREFIX2)&(PREFSUF(IBA,IPA,2)=SUFFIX1)
                  THEN RETURN(1)
              END
              RETURN(0)
         END CHECKPS

 NO ERRORS OR WARNINGS DETECTED.

COMPILE TIME          .75 MINS
```

```
  1     CHECKALLOPROCEDURE(IBIN)
  2          DECLARE(IARRAY(30),STRING5 CHAR(10)VAR,IVERBS,IRET,ILONG)EXTERNAL
  3          DECLARE VERBDICT FILE ENV(REGIONAL(1))KEYED EXTERNAL
  4          DECLARE VLIST(  4000) CHARACTER(4) EXTERNAL
  5          DECLARE IND CHARACTER(8)
  6          DECLARE STRINGA CHARACTER(4) VARYING
  7          DECLARE STRING CHARACTER(80)VARYING
  8          DECLARE BUF CHARACTER(80)
  9          DECLARE SUB CHARACTER(4)
 10          DECLARE SIB CHARACTER(2)
 11          DECLARE INTER CHARACTER(80)VARYING
 12          IF(ILONG)3) (ILONG,4) THEN RETURN
 14          STRINGA=SUBSTR(STRING5,3,1)  SUBSTR(STRING5,2,1)
                                                   SUBSTR(STRING5,1,1)
 15          IF ILONG=4 THEN STRINGA=SUBSTR(STRING5,4,1)  STRINGA
 17                     ELSE STRINGA=STRINGA  ' '
 18          ILOW=0
 19          IHIGH=IVERBS+1    IPOS=(IVERBS+1)/2
 21          J=1
 22      CHKOIF STRINGA=VLIST(IPOS) THEN GC TO FOUND
 24          IF STRINGA)VLIST(IPOS) THEN DC
 26          IHIGH=IPOS
 27          IPOS=(IPOS+ILOW)/2
 28          IF IPOS=ILOW THEN RETURN
 30     END
 31          ELSE DO
 32          ILOW=IPOS
 33          IPOS=(IPOS+IHIGH)/2
 34                        IF IPOS=ILOW THEN RETURN
 36                   END
 37          GO TO CHK
 38     FOUNDOIM1=IPOS-1  PUT STRING(IND)EDIT(IM1)(F(8))
 40          OPEN FILE(VERBDICT)DIRECT
 41          READ FILE(VERBDICT)INTC(BUF)KEY(IND)
 42        F20IF IBIN=0 THEN DO  IARRAY(1)=0  I=1  GC TC CHECK  END
 48          INTSIB=71+IBIN
 49          PUT STRING(SIB)EDIT(INTSIB)(F(2))
 50          SUB='*'  SIB  '*'
 51          I1=INDEX(BUF,SUB)
 52          IF I1=0 THEN GO TO BACK
 54          STRING=SUBSTR(BUF,I1+4)
 55          I2=INDEX(STRING,'*')
 56          STRING=SUBSTR(STRING,1,I2-1)
 57          I3B=INDEX(STRING,' ')  IF I3B=0 THEN I3B=100
 60          I3R=INDEX(STRING,'R')  IF I3R=0 THEN I3R=100
 63          I3I=INDEX(STRING,'I')  IF I3I=0 THEN I31=100
 66          I3=MIN(I3B,I3R,I3I)
 67          INTER=SUBSTR(STRING,1,I3-1)
 68          GET STRING(INTER)EDIT(INUM1)(F(I3-1))
 69          I4=INDEX(STRING,',')
 70          IF I4 =0 THEN DU
 72              STRING=SUBSTR(STRING,I4+1)
 73          I5B=INDEX(STRING,' ')  IF I5B=0 THEN I5B=100
 76          I5R=INDEX(STRING,'R')  IF I5R=0 THEN I5R=100
 79          I5I=INDEX(STRING,'I')  IF I5I=0 THEN I5I=100
 82          I5=MIN(I5B,I5R,I5I)
 83          INTER=SUBSTR(STRING,1,I5-1)
```

```
       CHECKALLOPROCEDURE(IBIN!

 84                      GET STRING(INTER)EDIT(INUM2)(F(I5-1))
 85                          END  ELSE INUM2=0
 87                 LOOPODO I=1 BY 1 WHILE IARRAY(I) =0
 88                          IF(IARRAY(I)=INUM1) (TARRAY(I)=INUM2)THEN GC TO CHECK
 90                      END LOOP
 91                               IF J=2 THEN GC TO BACK
 93                      IF2=-1
 94                      IF IPOS =1 THEN IF VLIST(IPCS-1)=STRINGA THEN IF2=IPCS-1
 97                      IF IPOS =IVERBS THEN IF VLIST(IPOS+1)=STRINGA THEN IF2=IPOS+1
100                      IF IF2)0 THEN GO TO BACK
102                      J=2  PUT STRING(IND)EDIT(IF2)(F(8))
104                      READ FILE(VERBDICT)INTC(BUF)KEY(IND)
105                      GO TO F2
106                 CHECKOCLOSE FILE(VERBDICT)
107                      CALL HOORAY
108                      IRET=1
109                      RETURN
110                 BACKOCLOSE FILE(VERBDICT)
111                      RETURN
112                          END CHECKALL
```

```
  1          HOORAYOPROCEDURE
  2             DECLARE((STRING1,PREFIX2,STRING3,WCRD,STRING5,STRING6,STEM,SUFFIX1
                  )CHAR(10)VAR,IFLAG,IPASS,IFLAG2)EXT
  3             OPEN FILE(SYSPRINT)OUTPUT
  4             PUT SKIP(5) EDIT(' THE WORD UNDER CCNSIDERATICN IS ',WORD)((2)A)
  5             PUT SKIP EDIT(' IT IS A FORM CF THE VERB ',STRING5)(A,A)
  6             CLOSE FILE(SYSPRINT)
  7                      IF IFLAG=1 THEN STRING3=STRING6
  9                      IF IPASS=1 THEN STRING3=STRING6
 11                      IF IFLAG2=1 THEN PREFIX2=STRING1
 13             IFLAG=0  IPASS=0  IFLAG2=0
 16             RETURN
 17                 END HOORAY
 1      GETOPROCEDURE
 2      DCL(PREFIX1,PREFIX2,STEM,SUFFIX1,SUFFIX2,SUFFIX3,WCRC)CHAR(10)VAR EXT
 3          ~~OPEN FILE(SYSIN)~~
 4         AOGET EDIT(SUFFIX1,SUFFIX2,SUFFIX3,STEM,PREFIX2,PREFIX1,WORC,ICHK)
             (X(10),(7)A(10),X(79),F(1))
 5           IF ICHK =1 THEN DO  PUT LIST(' ERRCR IN DATA INPUT') GO TO A  END
10           ~~CLOSE FILE(SYSIN)~~
11           CALL BKOUT(SUFFIX1)  CALL BKOUT(SUFFIX2)  CALL BKOUT(SUFFIX3)
14           CALL BKOUT(STEM)  CALL 3KOUT(PREFIX2)  CALL BKOUT(PREFIX1)
17           CALL BKOUT(WORD)
18           RETURN
19      BKOUTOPROCEDURE(S)

        /* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
        *       ALL BLANKS ARE REMOVED FROM THE STRING S                  *
         * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */

20         DECLARE S CHARACTER(*)VAR
21      LLO     IB=INDEX(S,' ')
22              IF IB , 0
23                   THEN S=SUBSTR(S,1,IB-1)    SUBSTR(S,IB+1)
24                   ELSE RETURN
25              GO TO LL
26      END BKOUT
27      END GET
```

```
     READINOPROCEDURE
     DECLARE IVERBS EXTERNAL
     DECLARE KEY CHARACTER(8)
     DECLARE VERBDICT FILE ENV(REGIONAL(1))KEYED EXTERNAL
     DECLARE VLIST(  4000) CHARACTER(4) EXTERNAL
     DECLARE BUFFER CHARACTER(80)VARYING
     DECLARE FIXBUF CHARACTER(80)
     OPEN FILE(VERBDICT)DIRECT
     DO IJKLMN=0 TO IVERBS-1
     PUT STRING(KEY)EDIT(IJKLMN)(F(8))
     READ FILE(VERBDICT)INTC(FIXBUF)KEY(KEY)
     BUFFER=FIXBUF
     I1=INDEX(BUFFER,'*71*')
     BUFFER=SUBSTR(BUFFER,I1+4)
     I2=INDEX(BUFFER,'*')
     BUFFER=SUBSTR(BUFFER,1,I2-1)
     CALL RETRO(BUFFER)
     CALL NOBKS(BUFFER)
     VLIST(IJKLMN+1)=BUFFER
     END
     CLOSE FILE(VERBDICT)
     RETURN
NOBKSO PROCEDURE(S)

/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*       ALL BLANKS ARE REMOVED FROM THE STRING S                       *
 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */

   DECLARE S CHARACTER(*)VAR
LLO     IB=INDEX(S,' ')
        IF IB , 0
             THEN S=SUBSTR(S,1,IB-1)    SUBSTR(S,IB+1)
             ELSE RETURN
          GO TO LL
END NOBKS
RETROO PROCEDURE(ST)
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*       REPLACE THE STRING ST BY THE BACKWARD STRING ST .              *
 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */

DECLARE ST CHAR(*)VAR,T CHAR(1)
   IF LENGTH(ST) )= 1 THEN RETURN
L=LENGTH(ST)  LEN=L/2
   DO I=1 TO LEN
    T=SUBSTR(ST,I,1)
    SUBSTR(ST,I,1)=SUBSTR(ST,L-I+1,1)
    SUBSTR(ST,L-I+1,1)=T
    END
END RETRO
  NDQEND READIN
  1      HEBREWNOPROCEDURE OPTIONS(MAIN)
  2             DECLARE(INOUNS,IRET)EXTERNAL
  3             DECLARE IARRAY(30)EXTERNAL
  4             DECLARE(SUFFIX3,SUFFIX2,SUFFIX1,STEM,PREFIX1,PREFIX2,WCRD)
                    CHARACTER(10)VARYING EXTERNAL
  5             DECLARE(STRING3,STRING5)CHARACTER(10)VARYING EXTERNAL
  6             DECLARE ENDS(15)CHARACTER(3)VARYING INITIAL('ZE','MI','OI','ZIE',
                    'Z','ZI','ZI+','M','O','MI+','CI+','D','CI','I','II')
  7             DECLARE STLBL(15) LABEL INITIAL(E1,E2,E2,E3,E4,E5,E6,E7,E7,E8,E8,
                    E9,E10,E11,E11)
  8             GET LIST(INOUNS)
  9             CALL READIN2
 10      READOCALL GET
 11             IF SUBSTR(STEM,1,1)='K' THEN STRING3='J'  SUBSTR(STEM,2)
 13              ELSE IF SUBSTR(STEM,1,1)='N' THEN STRING3='M'  SUBSTR(STEM,2)
 15               ELSE IF SUBSTR(STEM,1,1)='P' THEN STRING3='C'  SUBSTR(STEM,2)
 17                ELSE IF SUBSTR(STEM,1,1)='T' THEN STRING3='S'  SUBSTR(STEM,2)
 19                 ELSE IF SUBSTR(STEM,1,1)='V' THEN STRING3='U'  SUBSTR(STEM,2)
 21                  ELSE STRING3=STEM
 22         IF SUFFIX1='' THEN
 23             IF LENGTH(SUFFIX3)=3 THEN
 24                 IF SUBSTR(SUFFIX3,3)='I' THEN DC
 26                           SUFFIX1='I'  SUFFIX3=SUBSTR(SUFFIX3,1,2)  ENC
 29             IF SUFFIX1='' THEN STRING5=STRING3  ELSE STRING5=SUFFIX1  STEM
 32             IRET=0
 33             IARRAY(1)=0
 34             CALL CNOUN
 35             IF IRET=1 THEN GO TO READ
 37         D1ODO I=1 TO 12
 38             IF SUFFIX1=ENDS(I) THEN GO TC STLBL(I)
 40             END D1   GO TO E12
 42         E1OIARRAY(1)=1  IARRAY(2)=2  IARRAY(3)=3  IARRAY(4)=7  IARRAY(5)=16
 47             IARRAY(6)=28  IARRAY(7)=30  IARRAY(8)=44  IARRAY(9)=C
 51             CALL IALT1
 52             IARRAY(1)=5  IARRAY(2)=9  IARRAY(3)=10  IARRAY(4)=38
 56             IARRAY(5)=40  IARRAY(6)=43  IARRAY(7)=0
 59             CALL IALT2
 60             IARRAY(1)=34  IARRAY(2)=0
 62             CALL IALT3
 63             IARRAY(1)=12
 64             CALL IALT5
 65             IARRAY(1)=41
 66             CALL IALT7
 67             GO TO READ
 68         E2OIARRAY(1)=1  IARRAY(2)=2  IARRAY(3)=4  IARRAY(4)=6  IARRAY(5)=15
 73             IARRAY(6)=27  IARRAY(7)=28  IARRAY(8)=30  IARRAY(9)=37
 77             IARRAY(10)=44  IARRAY(11)=0
 79             CALL IALT1
 80             IARRAY(1)=5  IARRAY(2)=8  IARRAY(3)=11  IARRAY(4)=31
 84             IARRAY(5)=33  IARRAY(6)=38  IARRAY(7)=43  IARRAY(8)=46
 88             IARRAY(9)=0
 89             CALL IALT2
 90             IARRAY(1)=41  IARRAY(2)=46  IARRAY(3)=0
 93             CALL IALT7
 94             GO TO READ
 95         E3OIARRAY(1)=4  IARRAY(2)=27  IARRAY(3)=37  IARRAY(4)=0
 99             CALL IALT1
```

```
198              IARRAY(1)=5  IARRAY(2)=8  IARRAY(3)=9  IARRAY(4)=31  IARRAY(5)=32
203              IARRAY(6)=33  IARRAY(7)=43  IARRAY(8)=46  IARRAY(9)=0
207              CALL IALT2
208              GO TO READ
209              END HEBREWN
```

```
100              IARRAY(1)=33  IARRAY(2)=40  IARRAY(3)=45  IARRAY(4)=46
104              IARRAY(5)=C
105              CALL IALT2
106              IARRAY(1)=35  IARRAY(2)=0
108              CALL IALT4
109              IARRAY(1)=36
110              CALL IALT5
111              IARRAY(1)=14
112              CALL IALT8
113              IARRAY(1)=13
114              CALL IALT9
115              GO TO READ
116          E40IARRAY(1)=1  IARRAY(2)=2  IARRAY(3)=3  IARRAY(4)=5  IARRAY(5)=3C
121              IARRAY(6)=0
122              CALL IALT1
123              IARRAY(1)=1C  IARRAY(2)=43  IARRAY(3)=11  IARRAY(4)=19
127              IARRAY(5)=38  IARRAY(6)=39  IARRAY(7)=40  IARRAY(8)=C
131              CALL IALT2
132              GO TO READ
133          E50IARRAY(1)=4  IARRAY(2)=37  IARRAY(3)=44  IARRAY(4)=0
137              CALL IALT1
138              IARRAY(1)=43  IARRAY(2)=0
140              CALL IALT2
141              GO TO READ
142          E60IARRAY(1)=32  IARRAY(2)=39  IARRAY(3)=0
145              CALL IALT2
146              GO TO READ
147          E70IARRAY(1)=3  IARRAY(2)=0
149              CALL IALT1
150              IARRAY(1)=42
151              CALL IALT5
152              GO TO READ
153          E80IARRAY(1)=3  IARRAY(2)=0
155              CALL IALT2
156              GO TO READ
157          E90IARRAY(1)=1  IARRAY(2)=0
159              CALL IALT1
160              GO TO READ
161         E100IARRAY(1)=27  IARRAY(2)=37  IARRAY(3)=0
164              CALL IALT1
165              IARRAY(1)=33
166              CALL IALT2
167              GO TO READ
168         E110IARRAY(1)=1  IARRAY(2)=2  IARRAY(3)=3  IARRAY(4)=4  IARRAY(5)=6
173              IARRAY(6)=15  IARRAY(7)=28  IARRAY(8)=30  IARRAY(9)=37
177              IARRAY(10)=C
178              CALL IALT1
179              IARRAY(1)=5  IARRAY(2)=8  IARRAY(3)=11  IARRAY(4)=31
183              IARRAY(5)=33  IARRAY(6)=46  IARRAY(7)=0
186              CALL IALT2
187              IARRAY(1)=45  IARRAY(2)=0
189              CALL IALT5
190              GO TO READ
191         E120IF SUFFIX1 ='' THEN GO TO READ
193              IARRAY(1)=2C  IARRAY(2)=0
195              CALL IALT6
196              IF  SUFFIX3='' THEN GO TO READ
```

```
        IALT1OPROCEDURE

   1              IALT1OPROCEDURE
   2                   DECLARE(STRING3,STRING5)CHARACTER(10)VARYING EXTERNAL
   3                   STRING5=STRING3
   4                   CALL CNOUN
   5                   RETURN
   6              END IALT1

 NO ERRORS OR WARNINGS DETECTED.

COMPILE TIME         .37 MINS
```

```
         IALT2OPROCEDURE                                                                                                   PAGE      9

     1              IALT2OPROCEDURE
     2                   DECLARE(STEM,STRING5)CHARACTER(10)VARYING EXTERNAL
     3                   STRING5='D'  STEM
     4                   CALL CNOUN
     5                   RETURN
     6              END IALT2

NO ERRORS OR WARNINGS DETECTED.

COMPILE TIME         .38 MINS
```

```
      1           IALT3OPROCEDURE
      2                DECLARE(STEM,STRING5)CHARACTER(10)VARYING EXTERNAL
      3                STRING='+'  STEM
      4                CALL CNOUN
      5                RETURN
      6           END IALT3

NO ERRORS OR WARNINGS DETECTED.

COMPILE TIME        .39 MINS
```

```
  1           IALT4OPROCEDURE
  2                DECLARE(STEM,STRING5)CHARACTER(10)VARYING EXTERNAL
  3                STRING5='O'  STEM
  4                CALL CNOUN
  5                RETURN
  6           END IALT4

NO ERRORS OR WARNINGS DETECTED.

COMPILE TIME         .39 MINS
```

```
   1            IALT5OPROCEDURE
   2                 DECLARE(STEM,STRING5)CHARACTER(10)VARYING EXTERNAL
   3                 STRING5='Z'  STEM
   4                 CALL CNOUN
   5                 RETURN
   6            END IALT5

 NO ERROR  OR WARNINGS DETECTED.

COMPILE TIME         .38 MINS
```

```
     1              IALT60PROCEDURE
     2                   DECLARE(STEM,STRING5)CHARACTER(10)VARYING EXTERNAL
     3                   STRING5='M'  STEM
     4                   CALL CNOUN
     5                   RETURN
     6              END IALT6

 NO ERRORS OR WARNINGS DETECTED.

COMPILE TIME         .38 MINS
```

```
    1          IALT7OPROCEDURE
    2               DECLARE(STEM,STRING5)CHARACTER(10)VARYING EXTERNAL
    3               IF SUBSTR(STEM,1,1) ='I' THEN RETURN
    5               STRING5='D'  SUBSTR(STEM,2)
    6               CALL CNOUN
    7               RETURN
    8          END IALT7

 NO ERRORS OR WARNINGS DETECTED.

 COMPILE TIME        .41 MINS
```

```
     1              IALT8OPROCEDURE
     2                   DECLARE(STEM,STRING5)CHARACTER(10)VARYING EXTERNAL
     3                   STRING5='ZI'  STEM
     4                   CALL CNOUN
     5                   RETURN
     6              END IALT8

 NO ERRORS OR WARNINGS DETECTED.

COMPILE TIME          .38 MINS
```

```
        IALT90PROCEDURE

    1             IALT90PROCEDURE
    2                  DECLARE(STEM,STRING5)CHARACTER(10)VARYING EXTERNAL
    3                  STRING5='ZE'  STEM
    4                  CALL CNOUN
    5                  RETURN
    6             END IALT9

NO ERRORS OR WARNINGS DETECTED.

COMPILE TIME         .38 MINS
```

```
CNOUNOPROCEDURE
     DECLARE(STRING5 CHAR(10)VAR,IRET,INOUNS)EXT
     DECLARE IARRAY(30)EXTERNAL
     DECLARE NOUNDICT FILE ENV(REGIONAL(1))KEYED EXTERNAL
     DECLARE NLIST(15000)CHARACTER(4) EXTERNAL
     DECLARE IND CHARACTER(8)
     DECLARE STRING CHARACTER(100)VARYING
     DECLARE BUF CHARACTER(100)
     DECLARE SUB CHARACTER(4)INITIAL('*04*')
     DECLARE STRIN CHARACTER(100)VARYING
     DECLARE STRINGA CHARACTER(10)INITIAL('          ')
     DECLARE STRINGB CHARACTER(4)
     DCL COMPILERFAKEOUT CHAR(100)VAR
     DECLARE TBUF CHARACTER(100)DEFINED BUF
     ILONG=LENGTH(STRING5)
     DO IJK=0 TO ILONG-1
     SUBSTR(STRINGA,IJK+1,1)=SUBSTR(STRING5,ILONG-IJK,1)
     END
     STRINGB=STRINGA
     ILOW=0
     IHIGH=INOUNS+1  IPOS=(INOUNS+1)/2
 CHKOIF STRINGB=NLIST(IPOS)THEN GO TO FOUND
     IF STRINGB)NLIST(IPOS)THEN DO
     IHIGH=IPOS
     IPOS=(IPOS+ILOW)/2
     IF IPOS=ILOW THEN RETURN
END
     ELSE DO
     ILOW=IPOS
     IPOS=(IPOS+IHIGH)/2
                   IF IPOS=ILOW THEN RETURN
              END
     GO TO CHK
FOUNDODO IUP=IPOS+1 BY 1
     IF IUP,INOUNS THEN GO TO OUT11
     IF STRINGB =NLIST(IUP)THEN GO TO OUT11
     END
     OUT11OIUP=IUP-1
     DO IDOWN=IPOS-1 BY -1
     IF IDOWN)1 THEN GO TO OUT22
     IF NLIST(IDOWN) =STRINGB THEN GO TO OUT22
     END
OUT22OIDOWN=IDOWN+1
     OPEN FILE(NOUNDICT)DIRECT
     DO IPOS=IDOWN TO IUP
      IM1=IPOS-1  PUT STRING(IND)EDIT(IM1)(F(8))
     READ FILE(NOUNDICT)INTO(BUF)KEY(IND)
     IJK=INDEX(TBUF,'*02*')
     STRING=SUBSTR(TBUF,IJK+4)
     IJK=INDEX(STRING,'*')
     STRING=SUBSTR(STRING,1,IJK-1)
     IF STRING =STRING5 THEN GO TO NDLP
      I1=INDEX(BUF,SUB)
     IF I1=0 THEN GO TO BACK
     STRING=SUBSTR(BUF,I1+4)
     I2=INDEX(STRING,'*')
     STRIN=SUBSTR(STRING,I2)
```

```
            STRING=SUBSTR(STRING,1,I2-1)
            GET STRING(STRING)EDIT(INUM1)(F(I2-1))
            I1=INDEX(STRIN,SUB)
            IF I1=0 THEN INUM2=0
            ELSE DO
            STRIN=SUBSTR(STRIN,I1+4)
            I2=INDEX(STRIN,'*')
            ICOMPILERFAKEOUT=I2-1
            COMPILERFAKEOUT=SUBSTR(STRIN,1,ICOMPILERFAKEOUT)
            STRIN=COMPILERFAKEOUT
            GET STRING(STRIN)EDIT(INUM2)(F(I2-1))
            END
      LOOPODO I=1 BY 1 WHILE IARRAY(I) =0
            IF(IARRAY(I)=INUM1) (IARRAY(I)=INUM2)THEN GO TO CHECK
            END LOOP
      NDLPOEND
            GO TO BACK
      CHECKOCLOSE FILE(NOUNDICT)
            CALL HOORAY2
            IRET=1
            RETURN
      BACKOCLOSE FILE(NOUNDICT)
            RETURN
      END CNOUN
```

```
        HOORAY2OPROCEDURE
        DECLARE STRINC5 CHARACTER(10)VARYING EXTERNAL
        DECLARE WORD CHARACTER(10)VARYING EXTERNAL
        PUT SKIP(5)
        PUT EDIT(' THE WORD UNCER CCNSIDERATICN IS ',WORC)(A,A)
        PUT SKIP EDIT(' IT IS A FORM CF THE NCUN ',STRINGS)((2)A)
        RETURN
     END HOORAY2
```

```
READIN2CPROCEDURE
     DECLARE INOLNS EXTERNAL
     DECLARE KEY CHARACTER(8)
     DECLARE NOUNDICT FILE ENV(REGICNAL(1))KEYEC EXTERNAL
     DECLARE NLIST(150CO)CHARACTER(4) EXTERNAL
     DECLARE BUFFER CHARACTER(100)VARYING
     DECLARE FIXBUF CHARACTER(100)
     OPEN FILE(NCUNDICT)DIRECT
     DO IJKLMN=0 TC INCUNS-1
     PUT STRING(KEY)EDIT(IJKLMN)(F(8))
     READ FILE(NOUNDICT)INTC(FIXBUF)KEY(KEY)
     BUFFER=FIXBLF
     I1=INDEX(BUFFER,'*02*')
     BUFFER=SUBSTR(BUFFER,I1+4)
     I2=INDEX(BUFFER,'*')
     BUFFER=SUBSTR(BUFFER,1,I2-1)
     CALL RETRO(BUFFER)
     NLIST(IJKLMN+1)=BUFFER
     END
     CLOSE FILE(NOUNDICT)
     RETURN
RETROO PROCEDURE(ST)
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*       REPLACE THE STRING ST BY THE BACKWARD STRING ST .             *
 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */

DECLARE ST CHAR(*)VAR,T CHAR(1)
   IF LENGTH(ST) )= 1 THEN RETURN
L=LENGTH(ST)  LEN=L/2
   DO I=1 TO LEN
    T=SUBSTR(ST,I,1)
    SUBSTR(ST,I,1)=SUBSTR(ST,L-I+1,1)
    SUBSTR(ST,L-I+1,1)=T
    END
END RETRO
NDCEND READIN2
```

```
 1              CRFOPROCEDURE OPTIONS(MAIN)
 2              DECLARE STRING CHARACTER(80)VARYING
 3              DECLARE KEY CHARACTER(8)
 4              DECLARE TEMP CHARACTER(80)VARYING
 5              DECLARE VERBDICT FILE ENV(REGIONAL(1))KEYED
 6              DECLARE BIF(500)CHARACTER(80)
 7              DECLARE BUF CHARACTER(80)
 8              DECLARE VERB CHARACTER(4)
 9              ON ENDFILE(SYSIN)GO TO LAST
11              OPEN FILE(VERBDICT)OUTPUT SEQUENTIAL  CLOSE FILE(VERBDICT)
13              OPEN FILE(VERBDICT)UPDATE DIRECT
14              GET EDIT(BUF)(A(80))
15              ICOUNT=1
16          AGAINCGET EDIT(BIF)(A(80))
17              DO IJKLMN=1 TO 500
18              IKEY=ICOUNT+IJKLMN-2
19              PUT STRING(KEY)EDIT(IKEY)(F(8))
20              WRITE FILE(VERBDICT)FROM(BUF)KEYFROM(KEY)
21              BUF=BIF(IJKLMN)
22              END
23              ICOUNT=ICOUNT+500
24              GO TO AGAIN
25          LASTCICS=COUNT(SYSIN)
26              IF ICS=0 THEN GO TO WAIT
28              DO IJKLMN=1 TO ICS
29              IKEY=ICOUNT+IJKLMN-2
30              PUT STRING(KEY)EDIT(IKEY)(F(8))
31              WRITE FILE(VERBDICT)FROM(BUF)KEYFROM(KEY)
32              BUF=BIF(IJKLMN)
33              END
34              ICOUNT=ICOUNT+ICS
35          WAITOIKEY=ICOUNT-1
36              PUT STRING(KEY)EDIT(IKEY)(F(8))
37              WRITE FILE(VERBDICT)FROM(BUF)KEYFROM(KEY)
38              PUT SKIP EDIT(' THERE ARE ', ICOUNT,' VERBS.')(A,F(5),A)
39              CLOSE FILE(SYSIN)
40          NOABCOEND CRF
```

```
   1          CRNFOPROCEDURE OPTIONS(MAIN)
   2               DCL KEY CHARACTER(8)
   3               DCL S CHARACTER(1)
   4               DCL OUT CHARACTER(100)
   5               DCL INOUT CHARACTER(10C)VAR
   6               DECLARE NOUNDICT FILE ENV(REGIONAL(1))KEYEC
   7               OPEN FILE(NOUNDICT)OUTPUT SEQUENTIAL  CLOSE FILE(NOUNCICT)
   9               OPEN FILE(NOUNDICT)UPDATE DIRECT
  10               ON ENDFILE(SYSIN)GO TO ENDIT
  12               ICOUNT=C
  13          NEWWDOINOUT=''  IAST=0
  15          READOGET EDIT(S)(A(1))
  16               IF S=' ' THEN GU TO READ
  18               INOUT=INOUT  S
  19               IF S='*' IAST=IAST+1  ELSE IAST=0
  22               IF IAST)4 THEN GO TO READ
  24               OUT=INOUT
  25               PUT STRING(KEY)EDIT(ICCUNT)(F(8))
  26               WRITE FILE(NOUNDICT)FRCM(CUT)KEYFRCM(KEY)
  27               ICOUNT=ICOUNT+1
  28               GO TO NEWWD NOUNDICT
  29          ENDITOCLOSE FILE(~~VERBDICT~~)
  30               PUT EDIT(' THERE ARE ',ICOUNT,' NCUNS.')(A,F(5),A)
  31          END CRNF
```

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF EDUCATION

ERIC REPORT RESUME

ERIC ACCESSION NO.

CLEARINGHOUSE ACCESSION NUMBER

RESUME DATE: 6-30-69
P.A.
T.A.

IS DOCUMENT COPYRIGHTED? YES ☐ NO ☑
ERIC REPRODUCTION RELEASE? YES ☑ NO ☐

TITLE
Construction of an Algorithm for Stem Recognition in the
Hebrew Language
Final Report

PERSONAL AUTHOR(S)
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New York University, New York, N. Y. Institute of Hebrew

SOURCE CODE

REPORT/SERIES NO. 0-5541-384

OTHER SOURCE

SOURCE CODE

OTHER REPORT NO.

OTHER SOURCE

SOURCE CODE

OTHER REPORT NO.

PUB'L. DATE — —
CONTRACT/GRANT NUMBER OEC-0-8----134-3547(014)

PAGINATION, ETC.
275 pages

RETRIEVAL TERMS

IDENTIFIERS

A reference dictionary of all parts of speech except of verbs (some 18,000 entries) was compiled in accordance with the plan outlined previously (Final Report, Feb. 1967). A verb listing and classification was completed. Empirical rules previously formulated were incorporated into the program and tested. Result of computer operation on input of data drawn from this listing were noted.
It became apparent as the research proceeded, that a new problem was presenting itself in the ever continual dependency upon the services of a programmer. It was therefore decided that it would be necessary to separate the incorporated rules of Hebrew from the logic of the program. For this purpose the compiling of a special grammar adapted to a "black box" program was recommended. This would involve utilization of a program system giving prominence of five elements: 1) the input-data---the text to be analyzed, 2) the initial program effecting fractionation of data into stem and affix combinations, checking against defined grammatical tables, and checking results of the latter for legitimacy against empirical rules, 3) a noun dictionary, 4) a specialized grammar, 5) the final general dictionary look-up program.

figure 3